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info@powermation.com - 800-843-9859 - www.powermation.com

INTERFACE Wireless

Industrial wireless communication

The INTERFACE product range of wireless signal transmission systems from Phoenix Contact can be used for easy and safe wireless transmission of analog and digital signals or serial data.

This gives planners and users access to a very simple transmission path for industrial fields of application. Signals that could previously only be acquired with a great deal of effort or not at all are now fast and simple to acquire.

Depending on the requirements, various wireless technologies are available:

Trusted Wireless

Trusted Wireless is a specially designed wireless technology for industrial applications. The FHSS method is used for band spread, which guarantees a high immunity to interference. Trusted Wireless is characterized by the following features:

– Wide ranges* from a few hundred meters to several kilometers
– Rugged and reliable communication in an industrial environment
– License-free industrial, scientific, and medical band
– Good diagnostics options
– High local system density of several hundred networks possible
– Can be operated parallel to WLAN - 802.11 and Bluetooth systems without interference

Bluetooth

With Bluetooth, which also operates on the FHSS principle, it is possible to set up local wireless networks with up to seven devices. Thanks to a variety of application profiles, the standard can be used flexibly for different tasks. Its features include:

– Range* typ. up to 100 m in industrial halls and up to 200 m outdoors
– Cyclical and fast transmission of small data packets
– High local system density, i.e. interference-free parallel operation of many Bluetooth networks possible
– Interference-free parallel operation of WLAN-802.11 networks
– High data integrity due to 128-bit data encoding and device authentication

* The range can be considerably exceeded or undershot and depends on the environment, the antennae technology and the product used.

GPRS

GPRS (**G**eneral **P**acket **R**adio **S**ervice) is an additional service to exchange data using the mobile GSM telephone network (**G**lobal **S**ystem for **M**obile Communications). The TCP/IP based GPRS connections have the following advantages:

– Invoicing is based on data volumes and not on the connection time
– Permanent connection, i.e. a time-consuming dial-in procedure is omitted
– Available worldwide in over 200 countries
– Transmission speeds of up to 85,600 bps

Program overview

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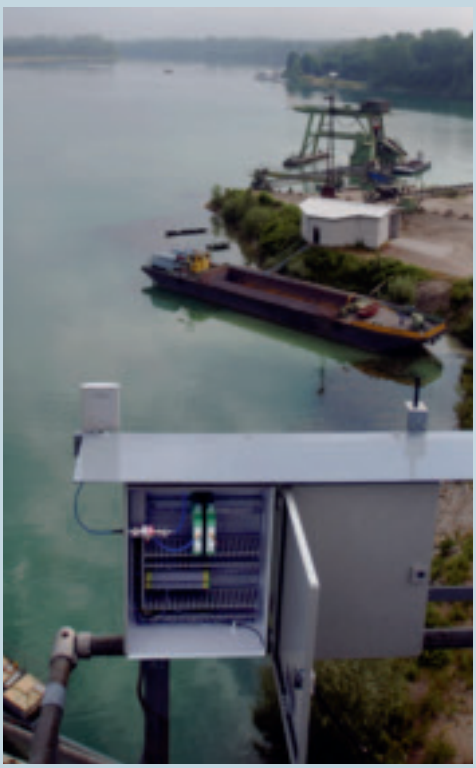

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Wireless IO (2400 MHz)

	RAD-Line IO bidirectional		RAD-Line IO extension modules		
Type	**RAD-ISM-2400-...-BD...**	**RAD-IN-4A-I RAD-OUT-4A-I**	**RAD-IN-8D RAD-OUT-8D-REL**	**RAD-IN+OUT-2D-1A-I**	**RAD-IN-2D-CNT RAD-OUT-2D-CNT**
Description	**Bidirectional wireless system,** with Trusted Wireless, can be extended with IO extension modules	**Analog module,** for four inputs or four outputs	**Digital module,** for eight inputs or eight outputs	**Analog/digital module,** for two digital inputs/outputs and one analog input/output	**Digital module,** for two counter/frequency inputs or two counter/frequency outputs
Page	609	610	610	611	611

Wireless IO (2400 MHz)

	RAD-Line IO unidirectional				
Type	**RAD-ISM-2400-SET-UD-ANT**	**RAD-ISM-2400-PIPE-TX-ME-RX-UD**	**RAD-ISM-2400-PIPE-SET-UD-ANT**	**RAD-ISM-2400-ME-TX-PIPE-RX-UD**	**RAD-ISM-2400-SET-UD-RPS...EX**
Description	**Unidirectional wireless system,** with Trusted Wireless, transmitter and receiver in IP20 housing	**Unidirectional wireless system,** with Trusted Wireless, transmitter (IP65) and receiver (IP20)	**Unidirectional wireless system,** with Trusted Wireless, transmitter and receiver (IP65)	**Unidirectional wireless system,** with Trusted Wireless, transmitter (IP20) and receiver (IP65)	**Unidirectional wireless system,** with Trusted Wireless, for Ex zone 1
Page	612	613	613	613	614

Serial Wireless (2400 MHz / GPRS/GSM)

	RAD-Line Serial IO		RAD-Line Serial	PSI-WL-...Bluetooth	PSI-Modem Line
Type	**RAD-ISM-2400-DATA-BD-BUS**	**RAD-ISM-TW-PB-GATEWAY**	**RAD-ISM-2400-DATA-BD**	**PSI-WL-...**	**PSM-Modem...**
Description	**Wireless transceiver,** with Trusted Wireless, for serial interfaces (RS-232, RS-422/RS-485), can be extended with IO extension modules	**PROFIBUS coupler,** for wireless transceiver RAD-ISM-2400-DATA-BD-BUS	**Wireless transceiver,** with Trusted Wireless, for serial interfaces (RS-232, RS-422/RS-485)	**Bluetooth converter,** to convert from RS-233 (V.24), RS-422 or RS-485 2-wire to Bluetooth wireless transmission, e.g. Modbus, PROFIBUS	**Industrial GPRS/GSM modems,** for all GMS networks 850/900/1800/1900, switching inputs and outputs, password protection
Page	616	617	618	626	630

Wireless accessories (2400 MHz)

	Omnidirectional antennas	Panel antennas	Adapters/splitters	Adapters/extensions cables	Autonomous energy supply
Type	**RAD-ISM-2400-ANT...**	**RAD-ISM-2400-ANT...**	**RAD-ADP..., CN-LAMBDA..., RAD-ISM-2400_SPL...**	**RAD-PIG... RAD-CAB...**	**RAD-SOL-SET... RAD-BAT...**
Description	**Omnidirectional antennas,** for the 2.4 GHz ISM band	**Panel antennas,** for the 2.4 GHz ISM band	**Adapters/splitters,** for the 2.4 GHz ISM band	**Adapters/extensions cables,** for the 2.4 GHz ISM band	**Solar and battery systems,** for autonomous power supply
Page	620	621	622	623	624

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Wireless IO (900 MHz)

RAD-Line IO bidirectional

RAD-ISM-900-...-BD...

Bidirectional wireless system,
with Trusted Wireless,
can be extended with IO extension modules

633

RAD-Line IO extension modules

RAD-IN-4A-I
RAD-OUT-4A-I

Analog module,
for four inputs or four outputs

634

RAD-IN-8D
RAD-OUT-8D-REL

Digital module,
for eight inputs or eight outputs

634

RAD-IN+OUT-2D-1A-I

Analog/digital module,
for two digital inputs/outputs and one analog input/output

634

RAD-IN-2D-CNT
RAD-OUT-2D-CNT

Digital module,
for two counter/frequency inputs or two counter/frequency outputs

634

Wireless IO (900 MHz)

RAD-Line IO unidirectional

RAD-ISM-900-SET-UD-ANT

Unidirectional wireless system,
with Trusted Wireless,
transmitter and receiver in IP20 housing

636

RAD-ISM-900-SET-...UD

Unidirectional wireless system,
with Trusted Wireless,
transmitter (IP65) and receiver (IP20)

637

RAD-Line IO XD

RAD-ISM-900-XD-BUS

XD wireless system,
with Trusted Wireless,
can be extended with IO extension modules

638

Serial Wireless (900 MHz)

RAD-Line Serial IO

RAD-ISM-900-DATA-BD-BUS

Wireless transceiver,
with Trusted Wireless, for serial interfaces (RS-232, RS-422/RS-485),
can be extended with IO extension modules

639

RAD-Line Serial

RAD-ISM-900-DATA-BD

Wireless transceiver,
with Trusted Wireless,
for serial interfaces (RS-232, RS-422/RS-485)

640

RAD-ISM-900-RS232-BD

Wireless transceiver,
with Trusted Wireless,
for serial interfaces (RS-232)

641

Wireless Ethernet (900 MHz / 2400 MHz)

RAD-Line Ethernet

RAD-ISM-900-EN-BD

Wireless transceiver,
with Trusted Wireless,
for Ethernet (900 MHz)

642

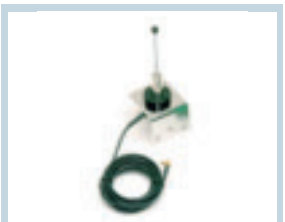
RAD-80211-XD-HP...

Wireless transceiver,
with WLAN 802.11b/g,
for Ethernet (2400 MHz),
can be extended with IO extension modules

643

Wireless accessories (900 MHz)

Omnidirectional antennas



RAD-ISM-900-ANT...

Omnidirectional antennas,
for the 900 MHz ISM band

644

Panel antennas

RAD-ISM-900-ANT...

Panel antennas,
for the 900 MHz ISM band

645

Adapters/splitters

CN-UB...,
RAD-ISM-900-ANT-4

Adapters/splitters,
for the 900 MHz ISM band

646

Adapters/extensions cables

RAD-CON...
RAD-CAB...

Adapters/extensions cables,
for the 900 MHz ISM band

647

Autonomous power supply

RAD-SOL-SET...

Solar systems,
for autonomous power supply

648

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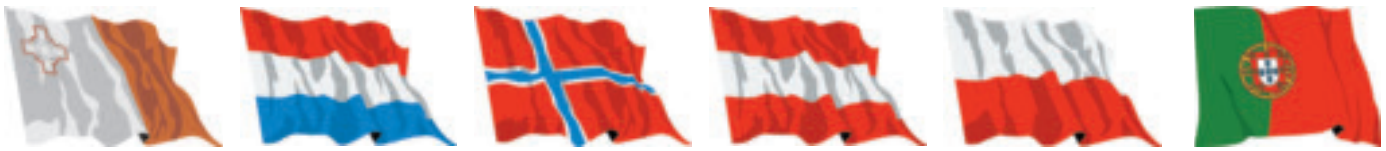
Approvals for countries

The 2400 Mhz wireless systems with Trusted Wireless are currently approved in the following countries:

Belgium | Bulgaria [1)] | Denmark | Germany

Estonia | Finland | France | Greece | Great Britain | Ireland

Iceland | Israel | Italy | Latvia | Lithuania | Luxembourg



Malta | The Netherlands | Norway | Austria | Poland | Portugal

Romania [1)] | Sweden | Switzerland | Slovakia | Slovenia | Spain

Czech Republic | Turkey [1)] | Hungary | Cyprus | Peru [1)]

China [1)] | India [1)] | Singapore | Egypt | South Africa [1)]

[1)] The approval is limited to individual systems.
(The current system registrations as well as additional country registrations can be found at www.phoenixcontact.com or on request.)

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RAD-Line IO - BD wireless system with Trusted Wireless

The bidirectional wireless system **RAD-ISM-2400-SET-BD-BUS-ANT** offers a safe and reliable signal path in the license-free ISM band 2400 MHz. Certification for use in Zone 2 extends the range of possible applications.

The radio system consists of two transceivers (transmitter and receiver). The wireless connection – following the frequency hopping system – is established automatically after applying the operating voltage on both devices. No parameterization or programming is necessary. The status of the radio link can be diagnosed via a relay (RF link).

Two digital signals in the range from 5...30 V AC/DC, as well as an analog current signal (4..20 mA), can be transmitted in both directions. The integrated bus foot allows additional I/O modules to be connected in rows.

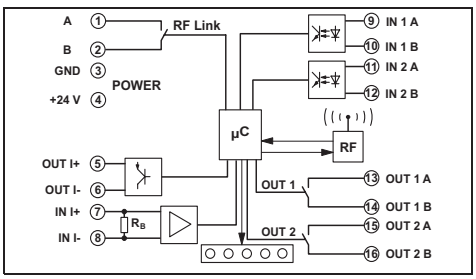
For multi-receiver systems (point-to-multipoint) or repeater solutions, both single transceivers and a set with three transceivers are provided.

Note:
For using a point-to-multipoint system, please order special hopkeys for Master (PMM) and Slave (PMS). For more information, see the data sheet or visit www.phoenixcontact.com.

RAD-ISM-...-SET-BD-BUS-ANT

Set comprising 2 transceivers (transmitter and receiver) and two antennas with connecting cables

Housing width 22.5 Ex:



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

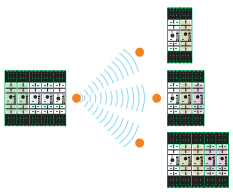
Description	Type	Order No.	Pcs. / Pkt.
Wireless set (2 transceivers, 2 antennas)	**RAD-ISM-2400-SET-BD-BUS-ANT**	**2867733**	1
Repeater set (3 transceivers)	**RAD-ISM-2400-REP-SET-BD-BUS**	**2885650**	1
Transceiver (individual)	**RAD-ISM-2400-BD-BUS**	**2867746**	1
Hopkey	**RAD-ISM-2400-HOP-EU-10**	**2867898**	1

Technical data		
Spark gap		
Direction		Bidirectional
Frequency range		2.4032 GHz ... 2.4799 GHz
Transmission capacity		10 mW
Analog input		
Number of inputs		1
Signal range		4 mA ... 20 mA
Input resistance		< 170 Ω
Digital input		
Number of inputs		2
Signal range		5 V AC/DC ... 30 V AC/DC
Switching level	1 signal ("H")	Min. 5 V DC
	0 signal ("L")	Max. 1.5 V DC
Analog output		
Number of outputs		1
Signal range		4 mA ... 20 mA
Load R_B		700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)
Digital output		
Contact type		3 floating N/O contacts
Switching voltage		30 V DC / 30 V AC
Switching current		0.5 A
General data		
Supply voltage		12 ... 30 V AC/DC
Current consumption	Typ./max.	75 mA / 150 mA
Degree of protection		IP20
Ambient temperature range		-20°C ... 65°C
Housing material		Polyamide PA non-reinforced
Dimensions W / H / D		22.5 / 99 mm / 114.5
Conformance / approvals		
Conformity		CE compliance (R&TTE directive 1999/5/EEC)
ATEX		Ex II 3 G EEx nL IIC
IECEx		Ex nL IIC

Repeater
(bidirectional)

Point-to-point
(bidirectional)

Point-to-multipoint
(unidirectional)



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Extension modules

Analog and digital extension modules as well as modules for recording and output of counter pulses and frequency measuring values are available for extending the bidirectional RAD-Line IO wireless system.

The extension modules can be aligned easily using the laterally integrated bus foot. Signal data and supply voltage are routed through using the bus foot. With up to eight modules, the system can be extended to a maximum of 33 analog or 66 digital signals.

Ex n

RAD-...-4A-I

Analog modules for 4 inputs or 4 outputs

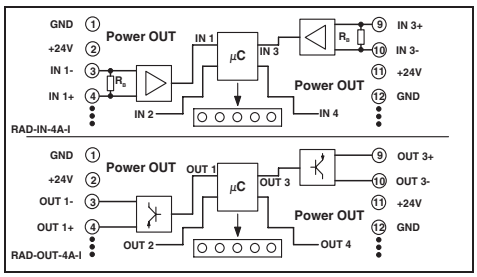
Ex n

RAD-...-8D(-REL)

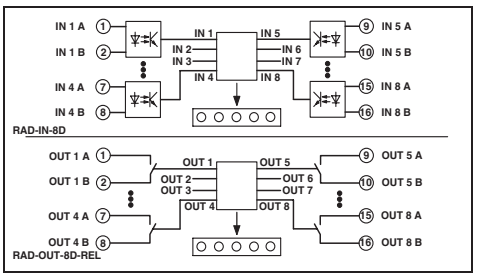
Digital modules for 8 inputs or 8 outputs

	solid [mm²]	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Housing width 22.5 — Ex:



Housing width 22.5 — Ex:



Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Extension module	Analog IN	**RAD-IN-4A-I**	**2867115**	1			
Extension module	Analog OUT	**RAD-OUT-4A-I**	**2867128**	1			
Extension module	Digital IN				**RAD-IN-8D**	**2867144**	1
Extension module	Digital OUT				**RAD-OUT-8D-REL**	**2867157**	1
Extension module	Mixed I/O						

Technical data		RAD-IN-4A-I	RAD-OUT-4A-I	RAD-IN-8D	RAD-OUT-8D-REL
Analog input					
Number of inputs		4	-	-	-
Signal range		4 mA ... 20 mA	-	-	-
Input resistance		< 170 Ω	-	-	-
Digital input					
Number of inputs		-	-	8	-
Signal range		-	-	5 V AC/DC ... 30 V AC/DC	-
Switching level	1 signal ("H")	-	-	Min. 5 V DC	-
	0 signal ("L")	-	-	Max. 1.5 V DC	-
Input frequency		-	-	-	-
Pulse length		-	-	-	-
Analog output					
Number of outputs		-	4	-	-
Signal range		-	4 mA ... 20 mA	-	-
Load R_B		-	700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	-	-
Digital output					
Contact type		-	-	-	Relay output
Switching voltage		-	-	-	30 V AC/DC (EC Declaration of Conformity) 30 V DC (with UL approval) 250 V AC (with UL approval)
Switching current		-	-	-	0.5 A (EC Declaration of Conformity) 2 A (with UL approval)
Clock frequency		-	-	-	-
Frequency output		-	-	-	-
General data					
Supply voltage		9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)
Current consumption	Typ./max.	100 mA / 130 mA	100 mA / 130 mA	25 mA / 30 mA	100 mA / 160 mA
Degree of protection		IP20	IP20	IP20	IP20
Ambient temperature range		-20°C ... 65°C	-20°C ... 65°C	-20°C ... 65°C	-20°C ... 65°C
Housing material		Polyamide PA non-reinforced	Polyamide PA non-reinforced	Polyamide PA non-reinforced	Polyamide PA non-reinforced
Dimensions W / H / D		22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm
Conformance / approvals					
Conformity		CE compliant		CE compliant	
ATEX		Ⓔx II 3 G EEx nL IIC		Ⓔx II 3 G EEx nL IIC	
IECEx		Ex nL IIC		Ex nL IIC	
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D		Class I, Div. 2, Groups A, B, C, D	

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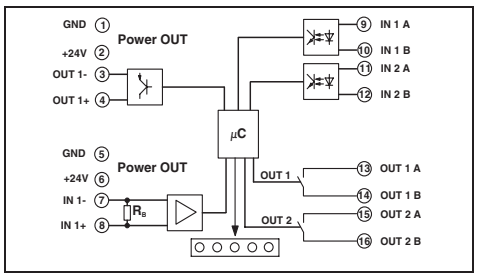
Ex n

RAD-IN+OUT-2D-1A-I

Analog/digital module for 2 digital inputs/outputs and 1 analog input/output

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-IN+OUT-2D-1A-I	**2867322**	1

1	
4 mA ... 20 mA	
< 170 Ω	
2	
5 V AC/DC ... 30 V AC/DC	
Min. 5 V DC	
Max. 1.5 V DC	
-	
-	
1	
4 mA ... 20 mA	
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	
Relay output	
30 V AC/DC (EC Declaration of Conformity)	
30 V DC (with UL approval)	
250 V AC (with UL approval)	
0.5 A (EC Declaration of Conformity)	
2 A (with UL approval)	
-	
-	
9 V DC ... 30 V DC (via bus foot)	
70 mA / 110 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
Ex nL IIC T5	
Class I, Div. 2, Groups A, B, C, D	

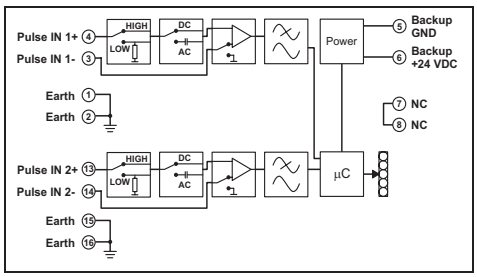
Ex n

RAD-IN-2D-CNT

Digital module for two counter/frequency inputs

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-IN-2D-CNT	**2885223**	1

-	
-	
-	
2	
0.1 V AC/DC ... 30 V AC/DC	
(common mode 3.6 V DC) / (differential mode 100 mV_{PP})	
-	
(0.1 Hz ... 10 kHz (50% duty Cycle))	
(high time 50 µs)	
-	
-	
-	
-	
-	
Transistor output, passive	
-	
Approx. 27 mA (terminal 3/14)	
Approx. 25 mA (terminal 4/13)	
(high speed 10 kHz with 50% duty Cycle)	
(low speed 10 Hz with 50% duty cycle)	
(0.1 Hz ... 10 kHz (50% duty Cycle))	
9 V DC ... 30 V DC (via bus foot)	
35 mA / 45 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
-	
Class I, Div. 2, Groups A, B, C, D	

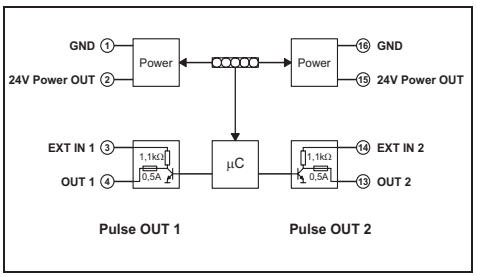
Ex n

RAD-OUT-2D-CNT

Digital module for two counter/frequency outputs

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-OUT-2D-CNT	**2885236**	1

-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
-	
9 V DC ... 30 V DC (via bus foot)	
90 mA / 115 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
-	
Class I, Div. 2, Groups A, B, C, D	

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RAD-Line IO - UD wireless system with Trusted Wireless

With the unidirectional RAD-Line-IO modules, two digital switching signals (5...30 V) and one analog sensor signal (4...20 mA) can be picked up and safely transmitted from the transmitter to the receiver. The radio connection is established automatically after applying the operating voltage on both devices. No parameterization or programming is necessary. The status of the radio link can be diagnosed via a relay (RF link).

The so-called PIPE modules **RAD-ISM-2400-PIPE...** can be installed directly outdoors. Thus, no additional conrol box is required. The convenient connection of the power supply unit and the sensors or actuators is established in a simple, rugged and quick manner using the M12 connectors located on the lower side of the device.

Devices are available for the direct mains connection (85...0.250 V AC) as well as for the low-voltage range (12...30 V DC). Depending on the respective hopkey type, the PIPE transmitters can be supplied using batteries or solar systems.

All PIPE modules can be combined with the existing devices in the rail-mountable ME housing as desired.

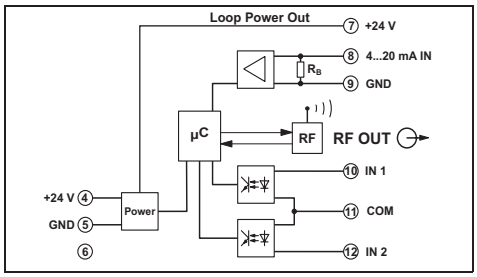
Please use the appropriate order key to order PIPE modules as well as combinations.

Note: The RAD-PIG-EF142-PIPE (Order No.: 2885922) adapter cable can be used to connect the antennas from the comprehensive RAD line range of accessories.

RAD-ISM-2400-SET-UD-ANT

Set consisting of transmitter, receiver and two antennas with connecting cables

Ex:



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-2.5	0.2-2.5	24-14	M3
Spring-cage connection (M12)	-	0.14-0.5	20-26	

Description	Type	Order No.	Pcs. / Pkt.
Wireless set (transmitter, receiver, including antennas)	**RAD-ISM-2400-SET-UD-ANT**	**2867283**	1
Transmitter (individual)	**RAD-ISM-2400-TX**	**2867319**	1
Receiver (individual)	**RAD-ISM-2400-RX**	**2867306**	1

Technical data

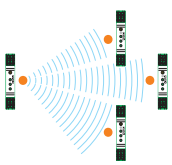
Spark gap			
Direction		Unidirectional	
Frequency range		2.4032 GHz ... 2.4799 GHz	
Transmission capacity		10 mW	
Number of channels		9 x 63	
Analog input			
Number of inputs / signal range		1 x 4 mA ... 20 mA	
Input resistance		< 170 Ω	
Digital input			
Number of inputs / signal range		2 x 5 V AC/DC ... 30 V AC/DC	
Switching level	1 signal ("H")	Min. 5 V DC	
	0 signal ("L")	Max. 1.5 V DC	
Analog output			
Number of outputs / Signal range		1 x 4 mA ... 20 mA	
Load R_B		700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	
Digital output		3 floating PDT contacts	
Switching voltage		30 V DC / 30 V AC	
Switching current		0.5 A	
General data		Transmitter (TX)	Receiver (RX)
Supply voltage		12 V DC ... 30 V DC	12 V DC ... 30 V DC
Current consumption	Typ./max.	35 mA / 45 mA	54 mA / 120 mA
Degree of protection		IP20	IP20
Ambient temperature range		-20°C ... 65°C	-20°C ... 65°C
Housing material		Polyamide PA non-reinforced	Polyamide PA non-reinforced
Dimensions W / H / D		17.5 / 99 / 114.5 mm	17.5 / 99 / 114.5 mm
Conformance / approvals			
Conformity		CE compliance (R&TTE directive 1999/5/EEC)	
ATEX		Ⓔx II 3 G EEx nL IIC	
IECEx		Ex nL IIC	

Order key RAD-ISM-2400-PIPE-TX-ME-RX-UD
(Configuration entered as example)

Order No.	Supply Transmitter (TX)	Transmission mode (Three times can be programmed)
2885854	**TXLV**	**HET**
	TXHV ≙ 85...250 V AC TXLV ≙ 12 ... 30 V DC	HCT ≙ Continuous transmission HET ≙ Transmitting at an event H005 ≙ 1 transmitting cycle every 5 min. H060 ≙ 1 transmitting cycle every 60 min. H120 ≙ 1 transmitting cycle every 120 min.

Point-to-point

Point-to-multipoint



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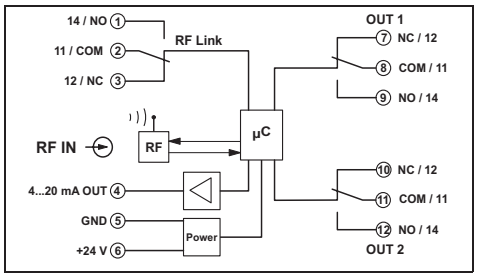
RAD-ISM-...-PIPE-TX-ME-RX-UD

Set, consisting of transmitter (IP65) and receiver (IP20) including antennas

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-ISM-2400-PIPE-TX-ME-RX-UD	**2885854**	1
RAD-ISM-2400-PIPE-TX	**2885647**	1
RAD-ISM-2400-PIPE-TX-HV	**2885333**	1
RAD-ISM-2400-RX	**2867306**	1

Unidirectional
2.4032 GHz ... 2.4799 GHz
10 mW
9 x 63

1 x 4 mA ... 20 mA
< 170 Ω

2 x 5 V AC/DC ... 30 V AC/DC
Min. 5 V DC
Max. 1.5 V DC

1 x 4 mA ... 20 mA
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)
3 floating PDT contacts
30 V AC/DC
0.5 A

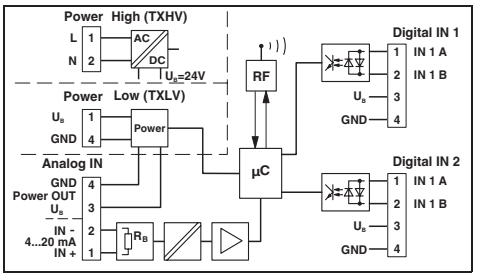
Transmitter (TX)	Receiver (RX)
Refer to the order key	12 V DC ... 30 V DC
50 mA / 65 mA (at 24 V DC)	54 mA / 120 mA
IP65	IP20
-20°C ... 65°C	-20°C ... 65°C
Aluminum/PBT	Polyamide PA non-reinforced
92 / 340 / 98 mm	17.5 / 99 / 114.5 mm

CE compliance (R&TTE directive 1999/5/EEC)
Ⓔx II 3 G Ex nL IIC T4
Ex nL IIC T4

RAD-ISM-...-PIPE-SET-UD-ANT

Set, consisting of transmitter (IP65) and receiver (IP65) including antennas

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-ISM-2400-PIPE-SET-UD-ANT	**2885935**	1
RAD-ISM-2400-PIPE-TX	**2885647**	1
RAD-ISM-2400-PIPE-TX-HV	**2885333**	1
RAD-ISM-2400-PIPE-RX	**2885689**	1
RAD-ISM-2400-PIPE-RX-HV	**2885320**	1

Unidirectional
2.4032 GHz ... 2.4799 GHz
10 mW
9 x 63

1 x 4 mA ... 20 mA
< 170 Ω

2 x 5 V AC/DC ... 30 V AC/DC
Min. 5 V DC
Max. 1.5 V DC

1 x 4 mA ... 20 mA
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)
3 floating PDT contacts
250 V AC/DC
0.5 A

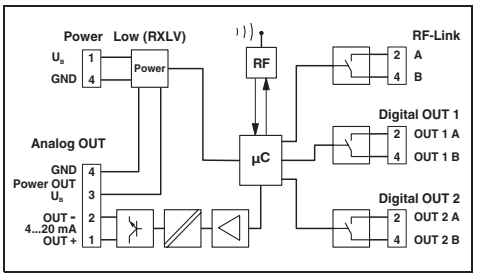
Transmitter (TX)	Receiver (RX)
Refer to the order key	Refer to the order key
50 mA / 65 mA (at 24 V DC)	115 mA / 145 mA (at 24 V DC)
IP65	IP65
-20°C ... 65°C	-20°C ... 65°C
Aluminum/PBT	Aluminum/PBT
92 / 340 / 98 mm	92 / 340 / 98 mm

CE compliance (R&TTE directive 1999/5/EEC)
Ⓔx II 3 G Ex nL IIC T4
Ex nL IIC T4

RAD-ISM-...-ME-TX-PIPE-RX-UD

Set, consisting of transmitter (IP20) and receiver (IP65) including antennas

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-ISM-2400-ME-TX-PIPE-RX-UD	**2885896**	1
RAD-ISM-2400-TX	**2867319**	1
RAD-ISM-2400-PIPE-RX	**2885689**	1
RAD-ISM-2400-PIPE-RX-HV	**2885320**	1

Unidirectional
2.4032 GHz ... 2.4799 GHz
10 mW
9 x 63

1 x 4 mA ... 20 mA
< 170 Ω

2 x 5 V AC/DC ... 30 V AC/DC
Min. 5 V DC
Max. 1.5 V DC

1 x 4 mA ... 20 mA
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)
3 floating PDT contacts
250 V AC/DC
0.5 A

Transmitter (TX)	Receiver (RX)
12 V DC ... 30 V DC	Refer to the order key
35 mA / 45 mA	115 mA / 145 mA (at 24 V DC)
IP20	IP65
-20°C ... 65°C	-20°C ... 65°C
Polyamide PA non-reinforced	Aluminum/PBT
17.5 / 99 / 114.5 mm	92 / 340 / 98 mm

CE compliance (R&TTE directive 1999/5/EEC)
Ⓔx II 3 G Ex nL IIC T4
Ex nL IIC T4

Order key RAD-ISM-2400-PIPE-SET-UD-ANT
(Configuration entered as example)

Order No.	Supply Transmitter (TX)	Transmission mode (Three times can be programmed)	Supply Receiver (RX)
2885935	**TXLV**	**HET**	**RXHV**
	TXHV ≙ 85...250 V AC TXLV ≙ 12 ... 30 V DC	HCT ≙ Continuous transmission HET ≙ Transmitting at an event H005 ≙ 1 transmitting cycle every 5 min. H060 ≙ 1 transmitting cycle every 60 min. H120 ≙ 1 transmitting cycle every 120 min.	RXHV ≙ 85...250 V AC RXLV ≙ 12 ... 30 V DC

Order key RAD-ISM-2400-ME-TX-PIPE-RX-UD
(Configuration entered as example)

Order No.	Supply Receiver (RX)
2885896	**RXHV**
	RXHV ≙ 85...250 V AC RXLV ≙ 12 ... 30 V DC

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RAD-Line IO - UD wireless system with Trusted Wireless for Ex-Zone 1

The unidirectional RAD-Line IO system **RAD-ISM-2400-SET-UD-RPS-NAM-EX** can be used to adopt two digital switching signals and one analog sensor signal (4...20 mA) from the Ex zones 0, 1, 2 and transmit them to the receiver in the safe area or Ex zone 2.

The unidirectional RAD-Line IO system **RAD-ISM-2400-SET-UD-RPS-EX** can be used to transmit an analog sensor signal (4...20 mA).

The devices on the transmitter side are located in an Ex housing and can be directly installed in Ex zone 1.

The repeater power supply comprised in the wireless systems supplies intrinsically safe 4...20 mA measuring transducers in the Ex area and transmits the signal to a load in the safe area.

The NAMUR isolation amplifier comprised in the RAD-ISM-2400-SET-UD-RPS-NAM-EX wireless system has been designed for operating proximity sensors and switches in the Ex area. The signals coming from the Ex area are transmitted via an active transistor output to the controller installed in the safe area.

The wireless connection is established automatically after applying the operating voltage. No parameterization or programming is necessary. The status of the radio link can be diagnosed via a relay (RF link).

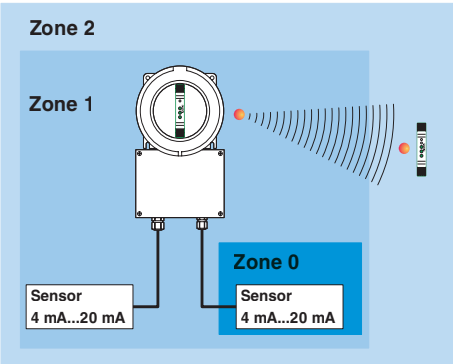
Note:
More information about the wireless set as well as the repeater power supplies and the NAMUR isolation amplifiers can be found in the relevant data sheet at www.phoenixcontact.net/download.

RAD-ISM-2400-SET-UD-...-EX

Set, consisting of a UD transmitter in the Ex housing (IP66) and receiver (IP20), without antennas

Description	Type	Order No.	Pcs. / Pkt.
Wireless set (UD transmitter with an intrinsically safe repeater power supply, intrinsically safe NAMUR isolation amplifier and power supply unit in the Ex housing, UD receiver, without antennas)	**RAD-ISM-2400-SET-UD-RPS-NAM-EX**	**2917272**	1
Radio set (UD transmitter with an intrinsically safe repeater power supply and power supply unit in the Ex housing, UD receiver, without antennas)	**RAD-ISM-2400-SET-UD-RPS-EX**	**2917081**	1

Technical data		
Spark gap		
Direction	Unidirectional	
Frequency range	2.4032 GHz ... 2.4799 GHz	
Transmission capacity	10 mW	
Number of channels	9 x 63	
Analog input		
Available input sources	2-wire measuring transducers, 4...20 mA Active, fed from the field side, 0/4...20 mA signals	
Number of inputs / signal range	1 x 4 mA ... 20 mA	
Digital input		
Available input sources	NAMUR proximity sensors (EN 60947-5-6) open circuit switch contacts Switching contacts with resistance circuit	
Analog output		
Number of outputs / Signal range	1 x 4 mA ... 20 mA	
Load R_B	700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	
Digital output	3 floating PDT contacts	
Switching voltage	30 V AC/DC	
Switching current	0.5 A	
General data	Transmitter (TX)	Receiver (RX)
Supply voltage	100 V AC ... 240 V AC	12 V DC ... 30 V DC
Degree of protection	IP66	IP20
Ambient temperature range	-20°C ... 50°C	-20°C ... 65°C
Housing material	Aluminum, copper-free (salt water resistant)	Polyamide PA non-reinforced
Dimensions W / H / D	236.5 / 371.5 / 172 mm	17.5 / 99 / 114.5 mm
Conformance / approvals		
Conformity	CE compliance (R&TTE directive 1999/5/EEC)	
ATEX	Ex II 2 (1) G Ex de ib [ia] IIC T4	



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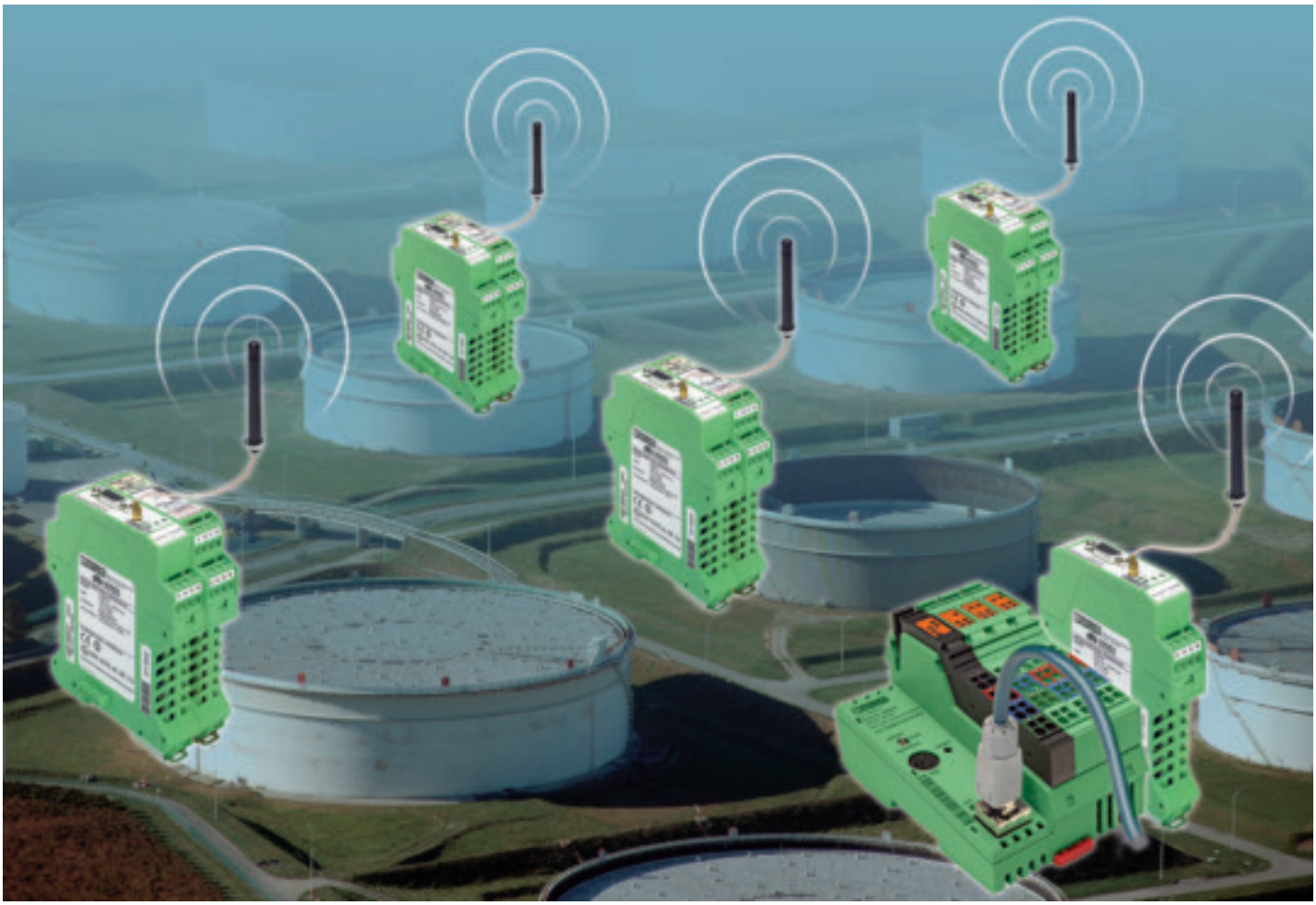
RAD-Line Serial IO / RAD-Line Serial



Self-organized network

High system availability is of great importance in industrial environments - from simple point-to-point transmission to high-performance meshed networks.

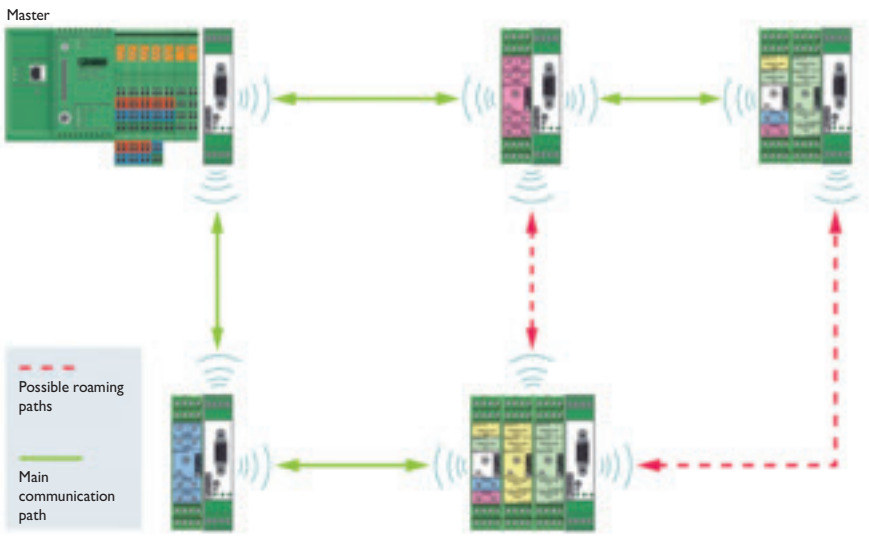
Slaves are connected either directly or via repeater slave intermediate stations. Up to 254 repeater slaves can be switched one after the other here in order to extend the wireless path or to integrate several (repeater) slaves.

Serial peripheral devices or IO extension modules can also be connected to the repeater slave intermediate stations.

In the event of a connection failure within the network, data communication can be continued by diverting the data via other network nodes (roaming).

The RAD-Line Serial modules convince with the following properties:

– Wide ranges from a few hundred meters to several kilometers
– Rugged and reliable communication in an industrial environment
– Complex network structures with up to 254 devices
– Easy remote diagnostics of the system
– A software tool is used to determine whether the module is used as a master, a slave or a repeater intermediate station
– Roaming function



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RAD-Line serial IO - BD wireless system for transmission of serial data and IO signals

The new bidirectional data transmission system **RAD-ISM-2400-DATA-BD-BUS** allows the wireless connection of several distributed controllers and the reception and output of I/O signals from the field to a central location (controller).

Besides the RS-232, RS-422/RS-485 interface, extension modules can be connected through the lateral bus foot. This enables sensors and actuators in the field to be acquired and connected via radio to a controller. The operating modes point-to-point, point-to-multipoint and multipoint to-point are possible.

An individual module can be parameterized as a master, slave or repeater slave using the easy-to-use software. The wireless modules can be directly configured as MODBUS slaves in the "mesh network". Up to 254 slaves can operate on one master. The convenient diagnostics software tool can be used to modify wireless parameters of the network devices and to monitor the network for its transmission quality.

Note:
You can download the basic software for configuration and diagnostics the download section on www.phoenixcontact.net/download free of cost in. A software license is required for the diagnostics of more than two network devices.

More information about the configuration software is given on page 619.

The RS-485/RS-422 interface shield connection is established through the grounded DIN rail. You can find shield terminal blocks in the Phoenix Contact CLIPLINE catalog.

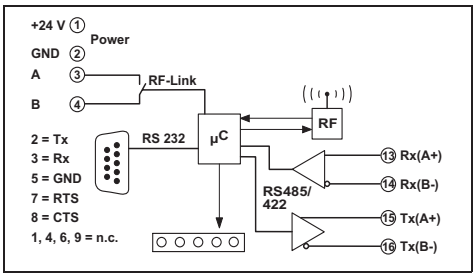
You can find other wireless systems as well as comprehensive accessories (e.g. antennas, connecting cables) on the Internet under www.phoenixcontact.com.

RAD-ISM-2400-DATA-BD-BUS

Wireless transceiver for serial interfaces (RS-232, RS-422/RS-485), can be extended with IO extension modules

Housing width 22.5

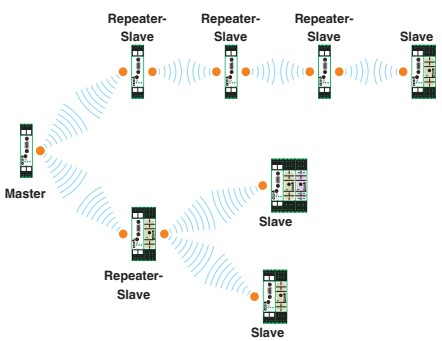
Ex:



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Description	Type	Order No.	Pcs. / Pkt.
Radio module with serial interface	**RAD-ISM-2400-DATA-BD-BUS**	**2867872**	1

Technical data			
Spark gap			
Direction		Bidirectional	
Frequency range		2.4032 GHz ... 2.4799 GHz	
Transmission capacity		100 mW (adjustable)	
Number of channels		3 x 27	
Serial port		RS-232	RS-485/RS-422
Connection method		SUB-D 9 (socket)	Pluggable COMBICON screw terminal block
Serial transmission rate		300 ... 57.6 kbps	300 ... 57.6 kbps
Data format/coding		Asynchronous	
Data flow control/protocols		RTS/CTS	
Size of packet		32 / 98 / 240 bytes	
General data			
Supply voltage		12 ... 30 V AC/DC	
Current consumption	Typ./max.	70 mA / 115 mA	
Degree of protection		IP20	
Ambient temperature range		-20°C ... 65°C	
Housing material		Polyamide PA non-reinforced	
Dimensions W / H / D		22.5 / 99 mm / 114.5	
Conformance / approvals			
Conformity		CE compliance (R&TTE directive 1999/5/EEC)	
ATEX		Ex II 3 G Ex nL IIC	
IECEx		Ex nL IIC T4	



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RAD-Line serial IO - PROFIBUS gateway

The new PROFIBUS gateway **RAD-ISM-TW-PB-GATEWAY** enables the connection of a wireless network consisting of RAD-ISM-2400-DATA-BD-BUS wireless modules to the PROFIBUS-DP.

As a Modbus master, the PROFIBUS gateway automatically organizes cyclical data exchange of IO wireless stations in the field and provides it on the PROFIBUS side. The full PROFIBUS speed of up to 12 Mbps is ensured here.

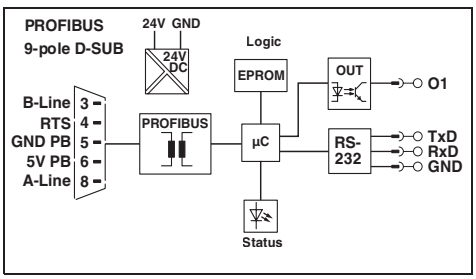
The predefined software modules in the GSD file help you to display your individual network of IO stations quickly and easily.

Note:
The GSD file (with the communication characteristics of a PROFIBUS-DP device) can be found in the download section under www.phoenixcontact.com.

RAD-ISM-TW-PB-GATEWAY

PROFIBUS interface implementer

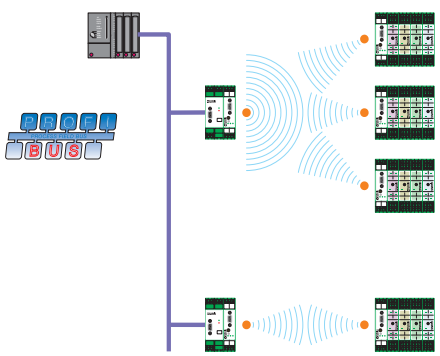
Width 35 mm



Connection data	solid [mm²]	stranded [mm²]	AWG
	0.2-2.5	0.2-2.5	24-14

Description	Type	Order No.	Pcs. / Pkt.
PROFIBUS coupler, for connecting a wireless network to the PROFIBUS-DP	**RAD-ISM-TW-PB-GATEWAY**	**2917366**	1
Connecting cable	**RAD-ISM-TW-RS232**	**2917159**	1

Technical data		
Input data		
Operating voltage U_B		24 V DC ± 20%
Nominal input current at U_{IN}		Typ. 50 mA (plus load current of an output)
Input circuit		Polarity protection, surge protection
Digital outputs		
Maximum switching voltage		24 V DC ±20% (U_B - $U_{Resid.}$ of output)
Max. switching current		150 mA
Residual voltage		< 0.5 V DC (U_{Rest} at I_N)
Output protection		Polarity protection, surge protection
RS-232 Interface		
Data rate		57.6 kbps
Type of connection		COMBICON
PROFIBUS interface		
Data rate		12 Mbps
Type of connection		D-SUB-9
General data		
Test voltage data interface/power supply		500 V AC
Ambient temperature (operation)		-20°C ... 65°C
Rated operating mode		100% operating factor
Standards/regulations		
Degree of protection		IP20
Assembly position/mounting		Any / In rows with zero spacing
Dimensions	W / H / D	35 mm / 99 mm / 114.5 mm



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RAD-Line serial - BD wireless system for transmission of serial data

The bidirectional data transmission system **RAD-ISM-2400-DATA-BD** for serial interfaces transports RS-232, RS-422 or RS-485 data over medium and large distances using the tried-and-tested Trusted Wireless technology. Controllers can thus be wirelessly networked with each other and remote serial peripheral devices can be connected. The point-to-point, point-to-multipoint and multipoint to-point operating modes are possible.

An individual module can be parameterized as master, slave or repeater slave using easy-to use software. Up to 254 slaves can operate on one master. The transmission is transparent and does not depend on the protocol. The convenient diagnostics software tool can be used to modify wireless parameters of the network devices and to monitor the network for its transmission quality.

Note:
You can download the basic software for configuration and diagnostics the download section on www.phoenixcontact.net/download free of cost in. A software license is required for the diagnostics of more than two network devices.

More information about the configuration software is given on page 619.

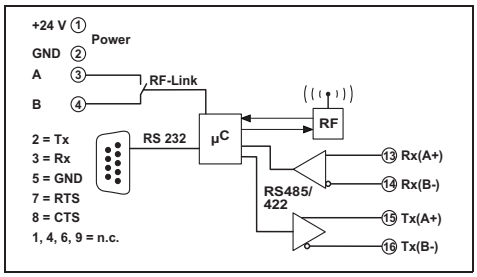
The RS-485/RS-422 interface shield connection is established through the grounded DIN rail. You can find shield terminal blocks in the Phoenix Contact CLIPLINE catalog.

Accessories: For master and repeater stations, we recommend the OMNI omni-directional antenna RAD-ISM-2400-ANT-OMNI-6-0 (order no.: 2885919).

RAD-ISM-2400-DATA-BD

Wireless transceiver for serial interfaces (RS-232, RS-422/RS-485)

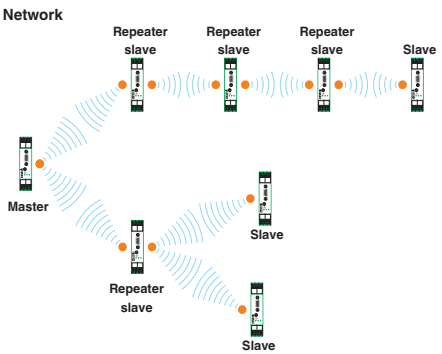
Housing width 22.5



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-12	M3

Description	Type	Order No.	Pcs. / Pkt.
Radio module with serial interface	**RAD-ISM-2400-DATA-BD**	**2867869**	1

Technical data			
Spark gap			
Direction		Bidirectional	
Frequency range		2.4015 GHz ... 2.4815 GHz	
Transmission capacity		100 mW (adjustable)	
Number of channels		3 x 27	
Serial port		RS-232	RS-485/RS-422
Connection method		SUB-D 9 (socket)	Pluggable COMBICON screw terminal block
Serial transmission rate		300 Bit/s ... 115.2 kbps	300 Bit/s ... 115.2 kbps
Data format/coding		Asynchronous	
Data flow control/protocols		RTS/CTS	
Size of packet		32 / 98 / 240 bytes	
General data			
Supply voltage		12 ... 30 V AC/DC	
Current consumption	Typ./max.	50 mA / 100 mA	
Degree of protection		IP20	
Ambient temperature range		-20°C ... 65°C	
Housing material		Polyamide PA non-reinforced	
Dimensions W / H / D		22.5 / 99 mm / 114.5	
Conformance / approvals			
Conformity		CE compliance (R&TTE directive 1999/5/EEC)	
ATEX		Ex II 3 G Ex nL IIC	
IECEx		Ex nL IIC T4	



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RAD-Line serial - Configuration accessories and software licenses

The configuration packet **RAD-ISM-...-CONFIG-KIT** comprises the basic equipment for startup of the wireless transceiver.

The RAD-Link software is used for configuration and diagnostics of wireless networks. Simple menu interfaces and a self-explanatory startup wizard enable quick and easy startup.

The software runs under the following operating systems: Windows 98™, 2000™ and XP™.

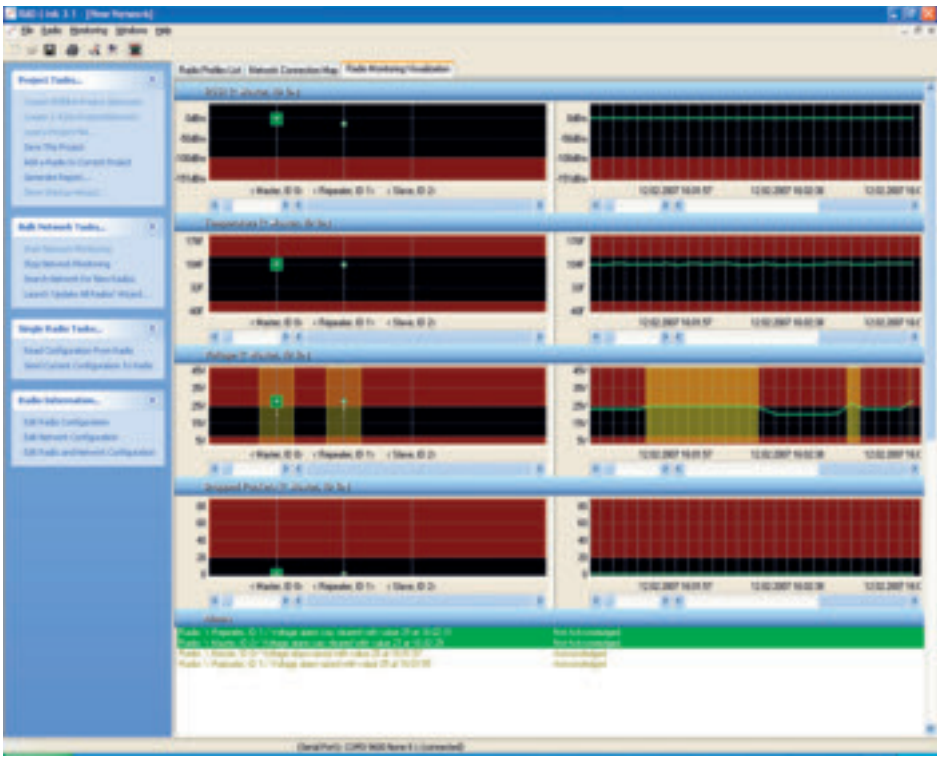
The computer and the wireless transducer communicate with one another through a software adapter cable and a serial interface.

Comprehensive diagnostic options can be activated through the shown opposite.

Note:
You can download the basic software for configuration and diagnostics the download section on www.phoenixcontact.net/download free of cost in. A software license is required for the diagnostics of more than two network devices.

RAD-ISM-...-DATA-CONFIG-KIT

Description	Type	Order No.	Pcs. / Pkt.
Configuration kit, consisting of CD with configuration software RAD-link, Quick Start Guide, user manual, interface cable (SUB-D9/USB)	RAD-ISM-2400-DATA-CONFIG-KIT	2885838	1
RS-232 cable, for connecting the wireless transceiver to a 9-pos. device interface			
2 m long	CABLE-D 9SUB/B/S/200/KONFEK/S	2302010	1
50 cm long	CABLE-D 9SUB/B/S/ 50/KONFEK/S	2299987	1
Connection cable, D-9-SUB to USB, with adapter D-9-SUB to D-25-SUB	CM-KBL-RS232/USB	2881078	1
License for activation of additional diagnostic functions			
for up to eight network devices	RAD-LINK-LIC- 8	2885964	1
for up to 15 network devices	RAD-LINK-LIC- 15	2885977	1
for up to 25 network devices	RAD-LINK-LIC- 25	2885980	1
for up to 100 network devices	RAD-LINK-LIC-100	2885993	1
for up to 255 network devices	RAD-LINK-LIC-255	2886002	1



Monitoring

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RAD line accessories
Omnidirectional antennas

Omnidirectional antennas are used for mobile or point-to-multipoint applications.

The small omni antennas are suitable for applications with a shorter range. The rugged RAD-ISM-2400-ANT-VAN… omni antenna cannot be immediately identified as an antenna and has an increased impact strength.

RAD-ISM-2400-ANT-OMNI-2-1

RAD-ISM-2400-ANT-VAN-...

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
OMNI omnidirectional antenna						
	RAD-ISM-2400-ANT-OMNI-2-1	**2867461**	1			
OMNI omnidirectional antenna with protection against vandals						
With connection MCX (male)				**RAD-ISM-2400-ANT-VAN- 3-1-MCX**	**2885702**	1
With SMA connection (male)				**RAD-ISM-2400-ANT-VAN- 3-0-SMA**	**2885867**	1
Mounting material				**RAD-ANT-VAN-MKT**	**2885870**	1
Technical data						
Ambient temperature range	-20°C ... 65°C			-40°C ... 80°C	-40°C ... 80°C	
Degree of protection	IP65			IP55	IP55	
Impact strength	-			IK08	IK08	
Gain	2 dBi			3 dBi	3 dBi	
Impedance	50 Ω			50 Ω	50 Ω	
Connection method	MCX (male) with cable (1.5 m)			MCX (male) with cable (1.5 m)	SMA (male) with cable (1.5 m)	
Acceptance angle Vertical / Horizontal	75 ° / 360 °			85 ° / 360 °	85 ° / 360 °	
Dimensions W / H	7.8 / 82.5 mm			86 / 43 mm	86 / 43 mm	
Frequency range	2.4 GHz			2.4 GHz	2.4 GHz	
Scope of supply	Incl. mounting material			-	-	

Omnidirectional Antennas

Both the large OMNI antennas are suitable for mobile applications with a greater range.

The antenna **RAD-ISM-2400-ANT-OMNI-5-0** has been specially designed for the PIPE wireless modules.

RAD-ISM-2400-ANT-OMNI-...

RAD-ISM-2400-ANT-OMNI-6-0

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Omnidirectional antenna						
2.4 Ghz, 5 dBi gain	**RAD-ISM-2400-ANT-OMNI-5-0**	**2884923**	1			
2.4 Ghz, 6 dBi gain				**RAD-ISM-2400-ANT-OMNI-6-0**	**2885919**	1
Technical data						
Ambient temperature range	-20°C ... 65°C			-40°C ... 75°C		
Degree of protection	IP55			IP55		
Gain	5 dBi			6 dBi		
Impedance	50 Ω			50 Ω		
Connection method	SMA (male)			N (female)		
Acceptance angle Vertical / Horizontal	45 ° / 360 °			30 ° / 360 °		
Dimensions W / H	13 / 187 mm			22 / 250 mm		
Frequency range	2.4 GHz			2.4 GHz		
Scope of supply	-			Incl. mounting material		

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RAD line accessories
Panel antennas

Panel antennas are used if large distances have to be covered in case of a line of sight connection.

Note: The parabolic antenna may only be used on a unidirectional transmitter and on bidirectional transceivers in conjunction with the 15 mm RAD-CAB-EF393-15M antenna extension cable, otherwise the maximum permissible value for emitted power of 20 dB is exceeded.

RAD-ISM-2400-ANT-PAN-8-0

RAD-ISM-2400-ANT-PAR-19-0

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
PANEL directional wireless antenna (without cable)						
8 dBi, linearly polarized	**RAD-ISM-2400-ANT-PAN- 8-0**	**2867610**	1			
8 dBi, circularly polarized, clockwise	**RAD-ISM-2400-ANT-CIR-8-0**	**2884936**	1			
Parabolic antenna				**RAD-ISM-2400-ANT-PAR-19-0**	**2867885**	1

Technical data				
Ambient temperature range		-40°C ... 75°C	-40°C ... 80°C	-40°C ... 70°C
Degree of protection		IP55	IP55	IP65
Gain		8 dBi	8 dBi	19 dBi
Impedance		50 Ω	50 Ω	50 Ω
Connection method		SMA (female)	SMA (female)	N (female)
Acceptance angle	Vertical / Horizontal	70 ° / 75 °	65 ° / 70 °	11 ° / 17 °
Dimensions W / H		80 / 100 mm	95 / 101 mm	610 / 419 mm
Frequency range		2.3 GHz	2.4 GHz	2.4 GHz
Scope of supply		Incl. mounting material	Incl. mounting material	Incl. mounting material

Connecting cable/weather protection

An appropriate adapter cable with a gasket sleeve **RAD-PIG-EF142-PIPE** is available in order to connect the PANEL panel antenna to the PIPE wireless modules.

The self-vulcanizing weather protection tape **RAD-TAPE-SV-25-10** serves as additional external protection of adapters, antenna splitters, cable connections, etc. against the effects of weather.

RAD-PIG-EF142-PIPE

RAD-TAPE-SV-25-10

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Adapter cable with gasket sleeve, to connect the PANEL directional antenna to RAD-ISM-2400-...-PIPE... wireless modules						
50 cm long, SMA (male) -> SMA (male)	**RAD-PIG-EF142-PIPE**	**2885922**	1			
Weather protection tape				**RAD-TAPE-SV-25-10**	**2885812**	1

Technical data			
Ambient temperature range (cable/gasket sleeve)	-30°C ... 70°C / -30°C ... 70°C		-40°C ... 120°C
Attenuation	Approx. 0.93 dB/m		-
Impedance	50 Ω		-
Reusability	Can be opened up to 20 times		-
Cable diameter	3.5 mm ... 7 mm		-
Properties	-		Self-vulcanizing
Width	-		25 mm
Length	-		10 m
Thickness	-		0.75 mm

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RAD line accessories
Surge protection/adapter

Surge protection adapters with Lambda/4 technology are available for installation of antennas outside buildings.

The RAD-ADP-N/F-N/F adapter is available for installation of antennas inside buildings.

CN-LAMBDA/4-5.9...

RAD-ADP-N/F-N/F

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
COAXTRAB, protection adapter for antenna connections with Lambda/4 technology, 2.4 to 5.9 GHz						
Socket-socket	**CN-LAMBDA/4-5.9-BB**	**2838490**	1			
Plug-socket	**CN-LAMBDA/4-5.9-SB**	**2800023**	1			
Socket-socket	**CN-LAMBDA/4-2.0-BB**	**2818863**	1			
Plug-socket	**CN-LAMBDA/4-2.0-SB**	**2818876**	1			
Adapter						
N (female) -> N (female)				**RAD-ADP-N/F-N/F**	**2867843**	1
N (male) -> SMA (female)				**RAD-ADP-N/M-SMA/F**	**2917036**	1
RSMA (female) -> SMA (female)				**RAD-ADP-RSMA/F-SMA/F**	**2884538**	1
SMA (female) -> SMA (female)				**RAD-ADP-SMA/F-SMA/F**	**2884541**	1
SMA (female) -> SMA (female), perpendicular				**RAD-ADP-SMA/F-SMA/M-90**	**2917324**	1

Technical data				
Ambient temperature range		-40°C ... 90°C	-40°C ... 100°C	-65°C ... 165°C
Degree of protection		IP68	IP55	IP20
Attenuation	(at 2400 MHz)	Typ. 0.05 dB (≤ 0.15 dB)	0.2 dB (1.7 GHz ... 2.3 GHz)	0.3 dB
Impedance		50 Ω	50 Ω	50 Ω
Frequency range		2.4 GHz ... 5.9 GHz	1.7 GHz ... 2.3 GHz	≤ 12.4 GHz

Antenna splitter

In an application with several receivers in one control cabinet, an antenna splitter **RAD-ISM-2400-SPL-...** can eliminate the need for one or more antennas.

RAD-ISM-2400-SPL-4-SMA

RAD-ISM-2400-SPL-2-SMA

Description	Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Antenna splitter						
4-pos.	**RAD-ISM-2400-SPL-4-SMA**	**2867856**	1			
2-pos.				**RAD-ISM-2400-SPL-2-SMA**	**2885595**	1

Technical data			
Ambient temperature range		-40°C ... 85°C	-40°C ... 85°C
Degree of protection		IP20	IP20
Attenuation per branch	(at 2400 MHz)	6 dB	3 dB
Impedance		50 Ω	50 Ω
Connection method		4x SMA (female), 1x SMA (male)	2x SMA (female), 1x SMA (male)
Frequency range		2.3 GHz ... 2.5 GHz	2.3 GHz ... 2.5 GHz
Scope of supply		4-way splitter, adapter from N (male) to SMA (female), 2 SMA terminating resistors	2-way splitter, adapter from N (female) to SMA (female), 4 strips of self-vulcanizing weather protection tape

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RAD line accessories
Adapter/extension cable

Various adapters **RAD-PIG...** and extension cables **RAD-CAB...** are available for extension or adaptation from a wireless module to an antenna.

Connection from the wireless module to the antenna should be kept as short as possible, as every cable leads to attenuation.

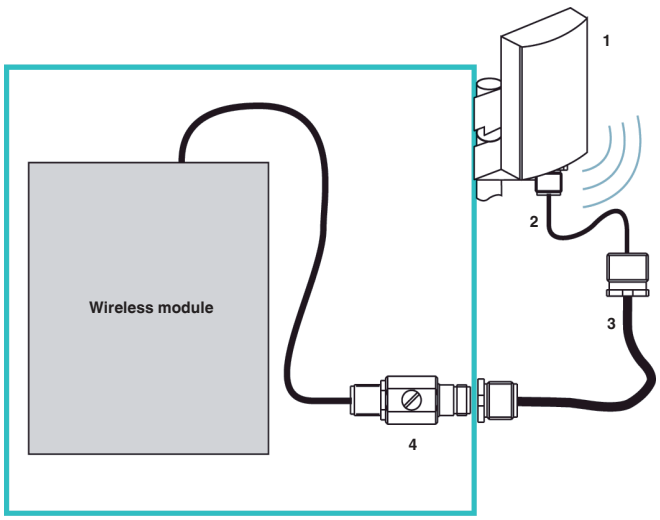
RAD-PIG-EF316-MCX-SMA

RAD-CAB-...

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Antenna adapter cable							
1 m long, MCX (male) -> SMA (male)		**RAD-PIG-EF316-MCX-SMA**	**2867678**	1			
50 cm long, MCX (male) -> N (male)		**RAD-PIG-EF316-MCX-N**	**2867681**	1			
30 cm long, N (female) -> SMA (male)		**RAD-PIG-EF316-N-SMA**	**2867694**	1			
50 m long, N (female) -> N (male)		**RAD-PIG-EF316-N-N**	**2867704**	1			
50 cm long, SMA (male) -> SMA (male)		**RAD-PIG-EF316-SMA-SMA**	**2885618**	1			
Antenna extension cable							
3 m long, N connection at both ends (male)					**RAD-CAB-EF393- 3M**	**2867649**	1
5 m long, N connection at both ends (male)					**RAD-CAB-EF393- 5M**	**2867652**	1
10 m long, N connection at both ends (male)					**RAD-CAB-EF393-10M**	**2867665**	1
15 m long, N connection at both ends (male)					**RAD-CAB-EF393-15M**	**2885634**	1
3 m long, SMA connection at both ends (male)					**RAD-CAB-EF142-3M**	**2884512**	1
5 m long, SMA connection at both ends (male)					**RAD-CAB-EF142-5M**	**2884525**	1
Technical data							
Ambient temperature range		-40°C ... 70°C			-40°C ... 105°C		
Attenuation	(at 2400 MHz)	Approx. 1.5 dB/m			Approx. 0.45 dB/m		
Impedance		50 Ω			50 Ω		

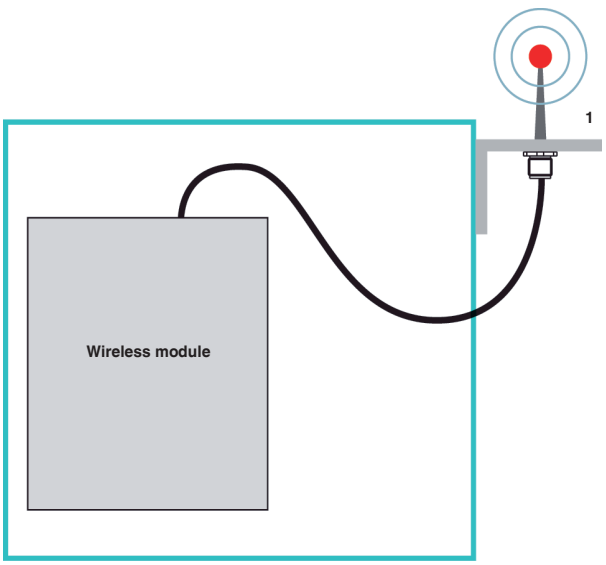
Control cabinet/switch box

– For antennas with extension cable, with surge protection



Control cabinet/switch box

– For antennas without extension cable, without surge protection



1 Antenna
2 Antenna adapter cable (pigtail)
3 Antenna extension cable
4 Surge protection

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Systems for autarchic power supply

The question of the supply of power frequently arises when registering signals from remotely-located sensors. Phoenix Contact now offers you a complete and fully autonomous power supply solution with solar and battery systems. Due to great variations in solar radiation at the different application locations, different connection loads are permitted.

The areas of application are:

– Supply of RAD-ISM-2400 wireless modules, PSI-GPRS/GSM modems etc. with the solar system **RAD-SOL-SET-24-100** or **RAD-SOL-SET-24-200**
– Supply of the RAD-ISM-2400-PIPE-TX wireless module with the solar system **RAD-SOL-SET-12-10** (for hopkey type H005 with transmission mode "send every 5 min.")
– Supply of the RAD-ISM-2400-PIPE-TX wireless module with the battery pack **RAD-BAT-PAC-12-19** (for hopkey type H060 with transmission mode "send every 60 min." or H120 with transmission mode "send every 120 min.")

Note:
More information about the specified wireless modules and systems for autonomous power supply can be found at www.phoenixcontact.de.

Contact us right in the first phase of planning and project planning so that we can together select the ideal standard solar system to suit your requirements (location, load, power reserve, etc.).

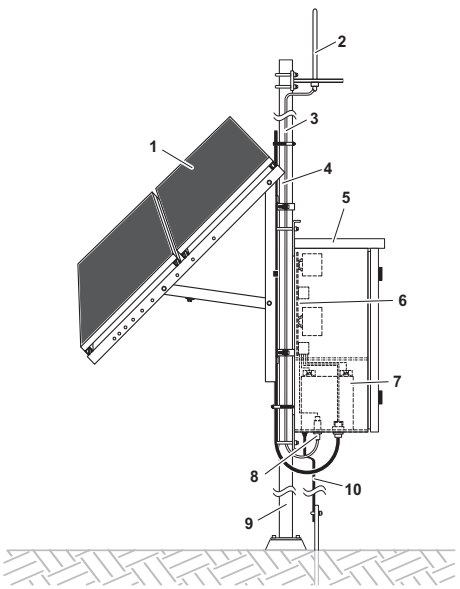
Accessories: M12 connection cable with the required lengths, e.g. sensor/actuator cable SAC-4P-MS-FS SCO (order no.: 1523586) can be found in the PLUSCON catalog as well as on the Internet at www.phoenixcontact.de.

RAD-SOL-SET-24-200

24 V / 200 Wp solar system, battery capacity 100 Ah

Description	Type	Order No.	Pcs. / Pkt.
24 V solar system, consisting of solar panel and a pre-wired control cabinet with charge controller, solar battery, surge protection, fuses and mounting material (including mast clips)	**RAD-SOL-SET-24-200**	**2917722**	1
12 V solar system, comprising a solar panel, prewired control cabinet with charge controller and solar battery, M12 connecting cable (2 m) and mounting material (including mast clips)			
12 V battery pack, battery type Li/$SOCl_2$, connection via M12 connector (without a connecting cable)			

Technical data	
Control cabinet / Solar system	
System voltage	24 V DC
Max. load (dependent on site of appl.)	0 W ... 40 W
Ambient temperature range	-20°C ... 50°C
Dimensions W / H / D	489 / 822.4 / 337.7 mm
Solar panel	
Output voltage	Typ. 17.3 V DC (voltage at maximum output)
Short circuit current	Max. 3.17 A
Nominal capacity	50 Wp +10 (- 5%)
Dimensions W / H / D	652 / 639 / 36 mm
Solar battery	
Nominal voltage U_N	12 V DC
Nominal capacity	100 Ah
Weight	32 kg
Dimensions W / H / D	168 / 213 / 306 mm
Charge controller	
Supply voltage	24 V DC
Current consumption	Typ. 10 mA
Nominal load	10 A
Dimensions W / H / D	152 / 55 / 34 mm



1 2 solar panels (conn. in series)
2 Antenna
3 Antenna cable
4 Flexible protective tubing
5 Control cabinet
6 Control cabinet electronics
7 Batteries
8 Surge protection for antenna cable and control cabinet electronics
9 Mast (e.g. signpost with 76 mm diameter
10 Protective earth (PE), grounding cable

Example for a typical assembly of a solar system

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RAD-SOL-SET-24-100

24 V / 100 Wp solar system, battery capacity 40 Ah

RAD-SOL-SET-12-10

12 V / 10 Wp solar system, battery capacity 6.6 Ah

RAD-BAT-PAC-12-19

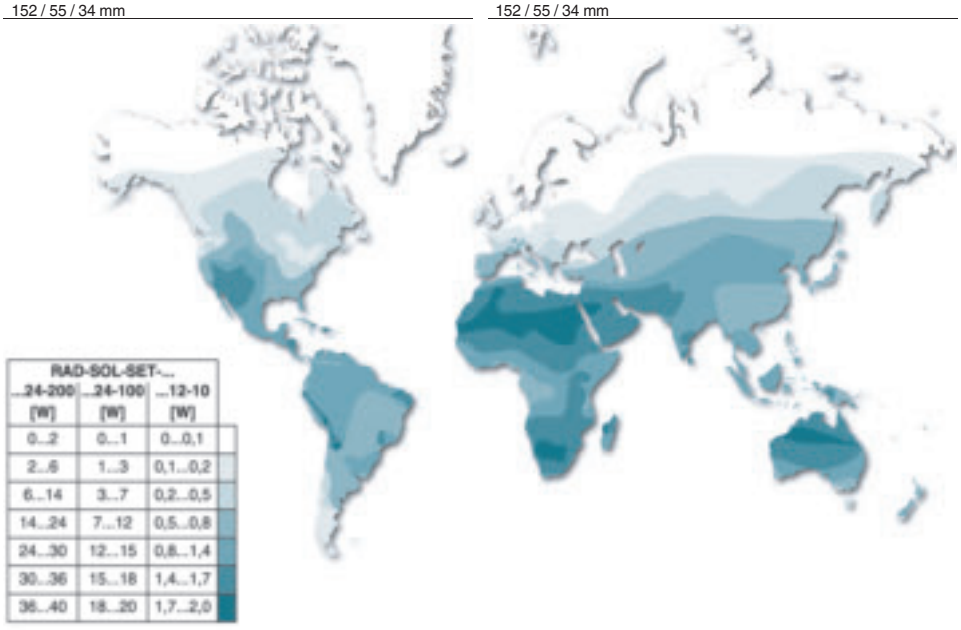
12 V battery pack (IP65), battery capacity 19 Ah

Type	Order No.	Pcs. / Pkt.
RAD-SOL-SET-24-100	**2885472**	1

Type	Order No.	Pcs. / Pkt.
RAD-SOL-SET-12- 10	**2917146**	1

Type	Order No.	Pcs. / Pkt.
RAD-BAT-PAC-12-19	**2917120**	1

24 V DC	12 V DC	-
0 W ... 20 W	0 mW ... 2000 mW	-
-20°C ... 55°C	-20°C ... 55°C	-25°C ... 65°C
489 / 822.4 / 337.7 mm	200 / 300 / 120 mm	80 / 42 / 150 mm
Typ. 17.3 V DC (voltage at maximum output)	Typ. 16.8 V DC (voltage at maximum output)	-
Max. 3.17 A	Max. 0.65 A	-
50 Wp +10 (- 5%)	10 Wp +15% (-5%)	-
652 / 639 / 36 mm	424 / 273 / 50 mm	-
12 V DC ± 20%	12 V DC ± 20%	14.4 V DC (3.67 V DC per battery)
40 Ah	6.6 Ah	19 Ah
15 kg	2.6 kg	-
175 / 210 / 175 mm	98.4 / 151.7 / 65.5 mm	-
24 V DC	12 V DC	-
Typ. 10 mA	Typ. 10 mA	-
10 A	6 A	-
152 / 55 / 34 mm	152 / 55 / 34 mm	-



Maximum connection power without taking into account the power reserve

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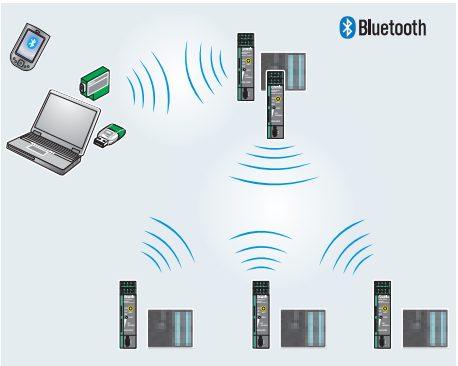
PSI line
Bluetooth interface converter
For RS-232, RS-422, RS-485



Wireless data transfer is particularly suitable for flexible and temporary data connections to changing communication modules or for addressing moving or mobile system components.

The international, license-free wireless standard Bluetooth™ is suitable for applications in industrial environments. Depending on the system concept, it is possible to realize radio connections across distances of up to 150 m or more. This radio standard fulfills the requirements for interference-free data transfer via the so-called frequency hopping system (FHSS) in the 2.4 GHz ISM band.

The **PSI-WL Bluetooth interface converters** are used for converting the serial interfaces RS-232, RS-422, RS-485 or USB. With the Bluetooth converters, point-to-point and multipoint connections can be realized. Thus, they function as an economical, alternative, flexible cable substitute or as access point for Bluetooth-capable end devices for handling programming, parameterizing or diagnosis tasks via notebook.

The high demands on transmission security with relation to immunity to interference or manipulation will be ensured with the frequency hopping, password protection, data encryption, favorites lists etc.

The Bluetooth converter **PSI-WL-RS232-RS485/BT** is suitable for universal application and is the preferred solution in the control cabinet, using an external antenna, and is characterized by the following performance characteristics:

Wireless transmission of serial interfaces up to 150 m or more.

Easy installation
- Mounting on EN DIN rail
- Supply of 24 V DC or AC
- Operation on all controllers without driver installation
- Integrated Bluetooth path diagnosis in the form of a dynamic bar chart display

Flexible parameterization/application options
- Can be used universally for RS-232, RS-422 and RS-485-2-wired interfaces up to 187.5 kbps
- Supports all popular 10/11-bit UART data formats
- 3964R-compatible
- Scalable transmission power (-28…20 dBm) for specific, spatial limits of the radio cell

High transmission reliability
- 128 bit data encoding
- Password protection
- Fixed and invisible device pairing

The PSI line component can be used universally as a converter for adapting interfaces together with corresponding Bluetooth adapters or for connecting serial devices to RS-485 networks. The device is particularly suitable for wireless access to controllers for programming or diagnostics as well as wireless Fieldbus communication e.g. Modbus, Profibus, etc.

In order to accelerate startup of wireless PROFIBUS paths or program access to Siemens MPI interfaces, pre-configured sets such as **PSI-WL-PROFIB/BT-SET** or **PSI-WL-MPI/BT-SET** have been made available. Bluetooth converters have been pre-configured with maximum Bluetooth security for each corresponding application.

Description
PSI Bluetooth converter, MCX connection for external antenna. **Scope of supply:** PSI Bluetooth converter, CD with configuration software and user manual
PSI Bluetooth PROFIBUS-SET, scope of supply: 2x PSI-Bluetooth converter, 2x OMNI omnidirectional antenna.
PSI Bluetooth MPI-SET, scope of supply: 1x PSI-Bluetooth converter, 1x OMNI omnidirectional antenna. 1x PSI-MPI/RS232 adapter, 1x RS232 cable
RS-232 SUB-D cable, length: 2 m - 9-pos. socket on 9-pos. socket - 9-pos. socket on 25-pos. socket
OMNI omnidirectional antenna
PANEL directional wireless antenna (without cable)
Antenna adapter cable
System power supply, primary switched-mode
DIN rail connector T-BUS

Technical data	
Supply	
Supply voltage	
Supply voltage	
Supply voltage	
Nominal current consumption	
Serial port	
Interfaces	
Connection method	
Data format/coding	
Data flow control/protocols	
Transmission speed	
Termination resistor	
Wireless interface	
Interfaces	
Antenna connection	
Transmission power	
Receiver sensitivity	
Frequencies	
Range depending on spatial conditions	
Bluetooth Multidrop master / slave	
General data	
Ambient temperature (operation)	
Electromagnetic compatibility	
Dimensions	W / H / D

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PSI-WL-RS232-RS485/BT

PSI Bluetooth converter for DIN rail mounting, for wireless transmission of RS-232, RS-422 and RS-485 interfaces.

PSI-WL-PROFIB/BT-SET

PSI Bluetooth PROFIBUS-SET, pre-configured to 187.5 kbps for an invisible, password-protected PROFIBUS point-to-point connection

PSI-WL-MPI/BT-SET

PSI Bluetooth MPI-SET, pre-configured to 38.4 kbps for password-protected programming access to a Siemens MPI interface

Housing width 22.5

Type	Order No.	Pcs. / Pkt.
PSI-WL-RS232-RS485/BT	**2708517**	1
PSM-KA9SUB9/BB/2METER	**2799474**	1
PSM-KA 9 SUB 25/BB/2METER	**2761059**	1
RAD-ISM-2400-ANT-OMNI-2-1	**2867461**	1
RAD-ISM-2400-ANT-PAN- 8-0	**2867610**	1
RAD-PIG-EF316-MCX-SMA	**2867678**	1
MINI-SYS-PS-100-240AC/24DC/1.5	**2866983**	1
ME 22,5 TBUS 1,5/ 5-ST-3,81 GN	**2707437**	50

Housing width 22.5

Type	Order No.	Pcs. / Pkt.
PSI-WL-PROFIB/BT-SET	**2313313**	1

Housing width 22.5

Type	Order No.	Pcs. / Pkt.
PSI-WL-MPI/BT-SET	**2313562**	1

10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block) 19 V AC ... 29 V AC (via pluggable COMBICON screw terminal block) 24 V DC ±20% (as an alternative or redundant, via backplane bus contact and system current supply)	10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block) 19 V AC ... 29 V AC (via pluggable COMBICON screw terminal block) 24 V DC ±20% (as an alternative or redundant, via backplane bus contact and system current supply)	10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block) 19 V AC ... 29 V AC (via pluggable COMBICON screw terminal block) 24 V DC ±20% (as an alternative or redundant, via backplane bus contact and system current supply)
40 mA (for 24 V DC)	40 mA (for 24 V DC)	40 mA (for 24 V DC)
RS-232 RS-422, RS-485 2-wire D-SUB-9 connector Serial asynchronous UART/NRZ, 7/8 Data, 1/2 Stop, 1 Parity, 10/11 bits character length Software handshake, Xon/Xoff, or hardware handshake RTS/CTS, 3964 compatible 300, 1200, 2400, 4800, 7200, 9600, 19200, 31250, 38400, 57600, 75000, 93750, 115200, 136000, 187500 bps	RS-485 2-wire COMBICON screw terminal block 8 Data, 1 Stop, 1 Parity, 11 bit character length - 187500 bps	RS-232 D-SUB-9 connector 8 Data, 1 Stop, 1 Parity, 11 bit character length Hardware handshake RTS/CTS 38400 Bit/s
390 Ω - 150 Ω - 390 Ω (can be connected)	390 Ω - 150 Ω - 390 Ω (can be connected)	-
Specification 2.0, class 1 External -28 dBm to 20 dBm (adjustable) -83.00 dBm 2.402 GHz ... 2.48 GHz (ISM bandwidth) 20 dBm (100 mW) = 80 m to 150 m 1/7	Specification 2.0, class 1 External 20 dBm -83.00 dBm 2.402 GHz ... 2.48 GHz (ISM bandwidth) 20 dBm (100 mW) = 80 m to 150 m -	Specification 2.0, class 1 External 20 dBm -83.00 dBm 2.402 GHz ... 2.48 GHz (ISM bandwidth) 20 dBm (100 mW) = 80 m to 150 m -
-20°C ... 60°C Conformance with R&TTE directive 1999/5/EEC 22.5 mm / 114.5 mm / 99 mm	-20°C ... 60°C Conformance with R&TTE directive 1999/5/EEC 22.5 mm / 114.5 mm / 99 mm	-20°C ... 60°C Conformance with R&TTE directive 1999/5/EEC 22.5 mm / 114.5 mm / 99 mm

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PSI Line
Bluetooth interface converter
For RS-232, RS-422, RS-485

Thanks to their compact design and the integrated antenna, the PSI Bluetooth adapters **PSI-WL-PLUG-RS232/BT** and **PSI-WL-PLUG-USB/BT** are preferably used for mobile, temporary maintenance and diagnostics connections and are thus a fast and easy addition to the PSI Bluetooth converter.

Bluetooth

PSI-WL-PLUG-RS232/BT

PSI Bluetooth RS-232 adapter for direct assembly on 9-pos. serial ports and wireless transmission of RS-232 interfaces

Bluetooth

PSI-WL-PLUG-USB/BT

PSI Bluetooth USB adapter for direct assembly on USB type A ports and wireless transmission from USB interfaces

Description	Housing width 52 Type	Order No.	Pcs. / Pkt.	Housing width 18 Type	Order No.	Pcs. / Pkt.
PSI Bluetooth RS-232 adapter, internal antenna. **Scope of supply:** PSI Bluetooth RS-232 adapter, CD with configuration software and user manual	**PSI-WL-PLUG-RS232/BT**	**2708494**	1			
PSI Bluetooth USB adapter, internal antenna. **Scope of supply:** PSI-Bluetooth-USB adapter, CD with driver, configuration software and manual				**PSI-WL-PLUG-USB/BT**	**2313083**	1
Plug-in power supply unit, 230 V AC/5 V DC with 1.5 m DC cable	**IBS ECO-LINK NT 230AC/5DC**	**2746472**	1			
1.5 m separate DC cable, to supply the PSI Bluetooth RS-232 adapter from an external 5 V DC source	**PSM-VLTG/1,5METER**	**2787460**	1			
Adapter set with 0.5 m cable, to supply the PSI Bluetooth RS-232 adapter from a USB or PS2 interface	**PSM-VLTG-USB/PS2/0,5**	**2708025**	1			

Technical data			
Supply			
Supply voltage	4 V DC ... 6 V DC (via 3-pos. equipment plug, using plug-in power supply unit or adapter set)	5 V DC (directly via the USB interface)	
Nominal current consumption	70 mA (for 5 V DC)	100 mA (for 5 V DC)	
Serial port			
Interfaces	RS-232	USB 2.0	
Connection method	D-SUB-9 female connector	USB type A, male connector	
Data format/coding	Serial asynchronous UART/NRZ, 7/8 Data, 1/2 Stop, 1 Parity, 10/11 bits character length	Synchronous / asynchronous	
Data flow control/protocols	Software handshake, Xon/Xoff, or hardware handshake RTS/CTS, 3964 compatible	Transparent to protocol incl. 3964 R protocol	
Transmission speed	300, 1200, 2400, 4800, 7200, 9600, 19200, 31250, 38400, 57600, 75000, 93750, 115200 bps	Up to 2.1 Mbps	
Wireless interface			
Interfaces	Specification 1.1, class 2	Specification 2.0, class 1	
Antenna connection	Internal	Internal	
Transmission power	0 dBm	20 dBm	
Receiver sensitivity	-75.00 dBm	-80.00 dBm	
Frequencies	2.402 GHz ... 2.48 GHz (ISM bandwidth)	2.402 GHz ... 2.48 GHz (ISM bandwidth)	
Range depending on spatial conditions	0 dBm (1 mW) = 10 m to 30 m	20 dBm (100 mW) = 80 m to 150 m	
General data			
Ambient temperature (operation)	-20°C ... 60°C	0°C ... 70°C	
Electromagnetic compatibility	Conformance with R&TTE directive 1999/5/EEC	Conformance with R&TTE directive 1999/5/EEC	
Dimensions W / H / D	52 mm / 16 mm / 60.5 mm	18 mm / 8 mm / 58 mm	

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SMS relay modules

The **PSI-MODEM-SMS-REL…** is a compact control and signaling system. Six digital or as analog or digital configurable inputs and four relay outputs with PDT contacts are monitored and controlled via SMS over any GSM mobile network. The integrated telephone book saves up to 50 telephone number of SMS recipients.

Every status change at the input sends a freely definable message to the selected recipient via SMS. The outputs can be switched off via SMS with the help of a pre-defined message. An error can thus be remotely acknowledged and eliminated.

The status of inputs and outputs can be requested for obtaining an overview about the status of the system.

The relay outputs can be switched for a pre-defined time and then return to the output status.

Unauthorized access is excluded with the integrated password protection.

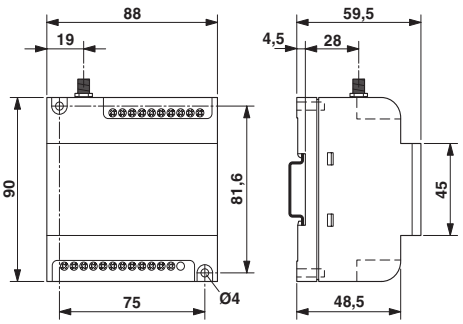
Setup and configuration of PSI-MODEM-SMS-REL… is done with the delivered configuration software. All settings can be easily and conveniently configured in this way; programming knowledge is not required.

The features at a glance:

– SMS status query of all inputs and outputs
– SMS remote control of the outputs
– Message via SMS in case of status change at the input
– Alarming in case of voltage failure via SMS
– Easy configuration on the PC without programming knowledge
– Max. 5 recipients per SMS
– Installation component device as per DIN 43880

Possible areas of application for the PSI-MODEM-SMS-REL… are:

– Machine, building and system monitoring
– Pumps, sewage treatment plants, water supply
– Light controllers, remote switching systems
– Lifts, doors
– Alarm and domestic engineering
– Climate and ventilation engineering
– Temperature monitoring



SMS-Relay

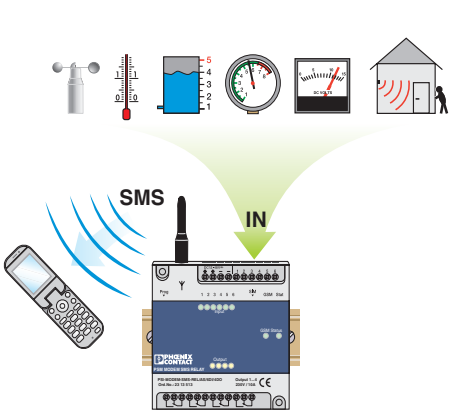
SMS remote and signaling system with six inputs and four relay outputs

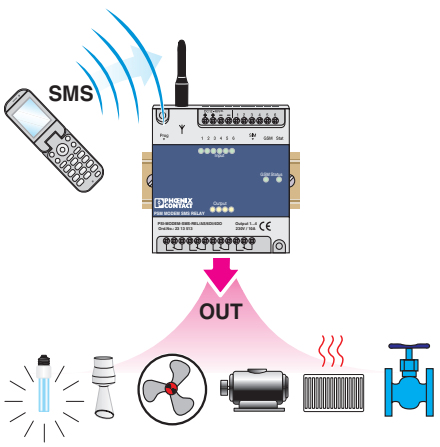
Terminal width 88

Description	Voltage U_N	Type	Order No.	Pcs. / Pkt.
SMS relay with six digital inputs and four relay outputs	110 V AC ... 240 V AC	**PSI-MODEM-SMS-REL/6 DI/4DO/AC**	**2313513**	1
SMS relay with six analog or digital configurable inputs and four relay outputs	12 V DC ... 48 V DC	**PSI-MODEM-SMS-REL/6ADI/4DO/DC**	**2313520**	1
GSM quad band antenna, with omnidirectional characteristic, 2 m antenna cable with SMA round connector, protection type: IP65, dimensions: 76 x 20 mm		**PSI-GSM-QB-ANT**	**2313135**	1
Connection cable, D-9-SUB to USB, with adapter D-9-SUB to D-25-SUB		**CM-KBL-RS232/USB**	**2881078**	1

Technical data

Supply		
Supply voltage	110 V AC ... 240 V AC	12 V DC ... 48 V DC
Nominal current consumption	10 mA	15 mA
Input data		
Switching input	Digital: 6 x U_N, switching threshold 85 V AC Analog: -	Digital: 6 x U_N, switching threshold 9.5 V DC Analog: 0 - 10 V
Output data		
Contact type	Single contact, 4x1 PDT contact	
Max. switching voltage	250 V AC/DC	
Min. switching voltage	12 V AC/DC	
Limiting continuous current	10 A	
GSM		
Frequencies	850 MHz (2 W (EGSM)) / 900 MHz (2 W (EGSM)) / 1800 MHz (1 W (EGSM)) / 1900 MHz (1 W (EGSM))	
SIM interface	3 volt SIM card	
Antenna connection	50 Ω impedance SMA antenna socket	
General data		
Ambient temperature (operation)	-25°C ... 55°C	
Electromagnetic compatibility	Conformance with R&TTE directive 1999/5/EEC	
Dimensions W / H / D	88 mm / 60 mm / 90 mm	





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GSM/GPRS modems

The GSM modem **PSI-GPRS/GSM MODEM/RS232-QB** provides protection by means of comprehensive safety functions: Selective answering, password protection and callback functions prevent unauthorized access. Here too, the focus is on EMC, electrical isolation, and surge protection for safe operation.

After a power failure, the GPRS/GSM modem automatically dials into the GSM network, since the encoded PIN of the SIM card is encoded and saved in the device. Two switching inputs allow a fax, an SMS or an e-mail to be sent separately. The integrated switching output can be activated with a password-protected SMS and the configuration changed.

Communication can be established simply by dialing the telephone number or as a GPRS connection.

Using GPRS is an especially favorable alternative, as in this case, invoicing depends on the data volume and not on the connection time.

Thanks to the fully integrated TCP/IP stack, every programmable control unit can communicate to a serial interface through GPRS with the help of the PSI-GPRS/GSM-MODEM/RS232-QB. Irrespective of the location of your system or control unit, the process data is at your disposal anywhere and everywhere through a reliable VPN connection. Worldwide usage in all 850, 900, 1800 and 1900 MHz GSM networks is ensured by the quadband modem.

PSI-GPRS/GSM-Modem

Quadband modem for GPRS and GSM with RS-232 interface, integrated TCP/IP stack and 2 alarm inputs

Housing width 22.5

Description	Type	Order No.	Pcs. / Pkt.
Industrial GPRS/GSM modem with RS-232 interface, scope of supply: Modem, CD with configuration software and user manual	**PSI-GPRS/GSM-MODEM/RS232-QB**	**2313106**	1
GSM quadband antenna, with omnidirectional characteristic, 2 m antenna cable with SMA round connector, protection type: IP65, dimensions: 76 x 20 mm	**PSI-GSM-QB-ANT**	**2313135**	1
System power supply, primary switched-mode	**MINI-SYS-PS-100-240AC/24DC/1.5**	**2866983**	1
DIN rail connector T-BUS	**ME 22,5 TBUS 1,5/ 5-ST-3,81 GN**	**2707437**	50
MPI adapter for coupling to the programming interface of a Siemens SIMATIC® S7-300/400 controller	**PSI-MPI/RS232-PC**	**2313148**	1
Interface converter for switching between two RS-232 interfaces	**PSI-MODEM-SPLITTER**	**2708766**	1
RS-232 SUB-D cable, length: 2 m	**PSM-KA9SUB9/BB/2METER**	**2799474**	1
RS-232 SUB-D cable, length: 0.5 m	**PSM-KA9SUB9/BB/0,5METER**	**2708520**	1

Technical data

Supply	
Supply voltage	10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
Supply voltage	24 V DC ±5% (as an alternative or redundant, via backplane bus contact and system current supply)
Nominal current consumption	< 350 mA (at 24 V)
Stand-by current consumption	< 80 mA (at 24 V)
RS-232 Interface	
Connection method	D-SUB-9 male connector
Data format/coding	Serial asynchronous UART/NRZ, 7/8 Data, 1/2 Stop, 1 Parity, 10/11 bits character length
Data flow control/protocols	Software handshake, Xon/Xoff or hardware handshake RTS/CTS
Transmission speed	Automatic data rate detection (default) or fixed setting to 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps, can be set via software
GSM/GPRS	
Frequencies	850 MHz (2 W (EGSM)) / 900 MHz (2 W (EGSM)) / 1800 MHz (1 W (EGSM)) / 1900 MHz (1 W (EGSM))
SIM interface	1.8 volt and 3 volt SIM card
GPRS compatibility	GPRS class 10, class B / coding scheme: CS1 to CS4
Network function	4 time slots for receiving data, 2 time slot for transmitting data. The PIN is saved in the modem. After a voltage interruption, there is automatic redialing into the network. Integrated TCP/IP Stack, independent connection establishment.
Network check	LED to show data signal quality
Antenna connection	50 Ω impedance SMA antenna socket
Input/output	
Switching input	2 x U_{Nom} 24 V DC / 5 mA, input range 9...60 V DC
Switching output	On the backplane (10 V DC ... 30 V DC / 80 mA at 24 V DC)
General data	
Ambient temperature (operation)	-25°C ... 60°C
Electrical isolation	Supply // RS-232 // Antenna
Test voltage	1.5 kV
Approvals for countries	EU, USA, Canada, other countries in preparation
Electromagnetic compatibility	Conformance with R&TTE directive 1999/5/EEC
Dimensions W / H / D	22.5 mm / 118.6 mm / 99 mm

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GSM/GPRS modems

The GSM modem **PSI-MODEM-GSM/ETH** is a high-capacity modem for industrial Ethernet networks which can be used to transmit sensitive data through GSM networks. The integrated firewall and the VPN (Virtual Private Network) support protect your application against unauthorized access.

Remote stations can be integrated into an IP network easily and without much difficulty via GPRS/EDGE connections or by dialing the telephone number. Worldwide usage of the modem in all 850, 900, 1800 and 1900 MHz GSM networks is ensured by the quadband technology. Irrespective of the location of your system or control unit, the process data is at your disposal anywhere and everywhere through a reliable VPN connection.

The focus is on EMC, electrical isolation and surge protection for reliable and safe communication.

The GPRS/EDGE service and the GSM network quality are also monitored, and if required, a corresponding message is sent or the GSM connection is re-established.

Six configurable switching inputs make it possible to send an SMS or an e-mail independently to several recipients. The four integrated switching outputs can be actuated via the password-protected SMS. The system status can thus be monitored and the functions switched remotely. The configuration can be easily and conveniently modified via remote dialing.

Ethernet

PSI-MODEM-GSM/ETH

Quadband modem for GPRS/EDGE and GSM with Ethernet interface, Firewall and VPN support and alarm inputs and outputs

Housing width 35

Description	Type	Order No.	Pcs. / Pkt.
Industrial GPRS/EDGE modem for Ethernet with integrated Firewall and VPN	**PSI-MODEM-GSM/ETH**	**2313355**	1
GSM quadband antenna, with omnidirectional characteristic, 2 m antenna cable with SMA round connector, protection type: IP65, dimensions: 76 x 20 mm	**PSI-GSM-QB-ANT**	**2313135**	1
System power supply, primary switched-mode	**MINI-SYS-PS-100-240AC/24DC/1.5**	**2866983**	1
DIN rail connector (optional), for routing through of the supply voltage and data signal, two pieces are required per device	**ME 17,5 TBUS 1,5/ 5-ST-3,81 GN**	**2709561**	10

Technical data

Supply		
Supply voltage		10 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
Supply voltage		24 V DC ±5% (as an alternative or redundant, via backplane bus contact and system current supply)
Nominal current consumption		< 360 mA (at 24 V)
Stand-by current consumption		< 90 mA (at 24 V)
Ethernet interface		
Connection method		RJ45 female connector, shielded
Transmission speed		10/100 Mbps
Transmission length		100 m (shielded twisted pair)
Functions		
Management		Web-based management, SNMP or Factory Manager Software FL SWT
GSM/GPRS		
Frequencies		850 MHz (2 W (EGSM)) / 900 MHz (2 W (EGSM)) / 1800 MHz (1 W (EGSM)) / 1900 MHz (1 W (EGSM))
SIM interface		1.8 volt and 3 volt SIM card
GPRS compatibility		GPRS class 12, class B / coding scheme: CS1 to CS4; EDGE (E-GPRS) multislot class 10
Network function		4 time slots for receiving data, 4 time slots for transmitting data. The PIN is saved in the modem. After a voltage interruption, there is automatic redialing into the network. Integrated TCP/IP stack, firewall and VPN support, independent connection establishment.
Network check		LED to show data signal quality
Antenna connection		50 Ω impedance SMA antenna socket
Input/output		
Switching input		6 x $U_{nominal}$, input range 10 V DC ... 30 V DC
Switching output		4 x $U_{nominal}$, input range 10 V DC ... 30 V DC / 250 mA, short-circuit-proof
General data		
Ambient temperature (operation)		-25°C ... 60°C
Electrical isolation		Supply // Ethernet (TP) // Antenna
Test voltage		1.5 kV (50 Hz, 1 min.)
Approvals for countries		EU, USA, Canada, other countries in preparation
Electromagnetic compatibility		Conformance with R&TTE directive 1999/5/EEC
Dimensions	W / H / D	35 mm / 114.5 mm / 99 mm

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Approvals for countries

The 900 MHz wireless systems with Trusted Wireless are currently approved in the following countries:

USA

Canada

Mexico

Argentina

Peru

America

Australia

New Zealand

Additional country registrations can be found at www.phoenixcontact.com or are available on request.

Note:
The products are provided only for export outside the EU and the European Economic Area.

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RAD-Line IO - BD wireless system with Trusted Wireless

The bidirectional wireless system **RAD-ISM-900-SET-BD-BUS-ANT** offers a safe and reliable signal path in the license-free ISM band 900 MHz. The approval for use in class 1, division 2 extends the range of possible applications.

The radio system consists of two transceivers (transmitter and receiver). The wireless connection – following the frequency hopping system – is established automatically after applying the operating voltage on both devices. No parameterization or programming is necessary. The status of the radio link can be diagnosed via a relay (RF link).

Two digital signals in the range from 5...30 V AC/DC, as well as an analog current signal (4..20 mA), can be transmitted in both directions. The integrated bus foot allows additional I/O modules to be connected in rows.

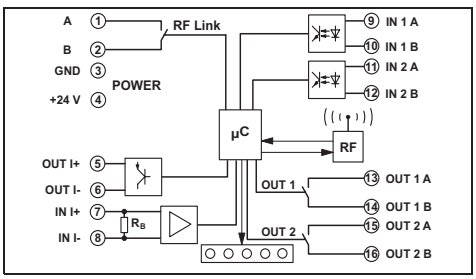
Individual transceivers are available for multi-receiver systems (point-to-multipoint) or repeater solutions.

Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-SET-BD-BUS-ANT

Set comprising 2 transceivers (transmitter and receiver) and two antennas with connecting cables

Housing width 22.5



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

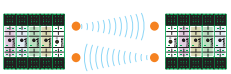
Description		Type	Order No.	Pcs. / Pkt.
Wireless set (2 transceivers, 2 antennas)	America	**RAD-ISM-900-SET-BD-BUS-ANT**	**2867270**	1
Wireless set (two transceivers)		**RAD-ISM-900-SET-BD-BUS**	**2867089**	1
Transceiver (individual)		**RAD-ISM-900-BD-BUS**	**2867092**	1
Wireless set (2 transceivers, 2 antennas)	Australia	**RAD-ISM-900-SET-BD-BUS-ANT-AU**	**2867490**	1
Wireless set (two transceivers)		**RAD-ISM-900-SET-BD-BUS-AU**	**2867487**	1
Transceiver (individual)		**RAD-ISM-900-BD-BUS-AU**	**2867500**	1
Wireless set (2 transceivers, 2 antennas)	New Zealand	**RAD-ISM-900-SET-BD-BUS-ANT-NZ**	**2885126**	1
Wireless set (two transceivers)		**RAD-ISM-900-SET-BD-BUS-NZ**	**2885113**	1
Transceiver (individual)		**RAD-ISM-900-BD-BUS-NZ**	**2885139**	1

Technical data

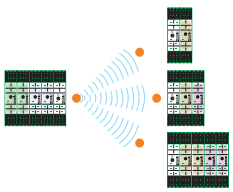
Spark gap		America	Australia	New Zealand
Direction		Bidirectionall	Bidirectional	Bidirectional
Frequency range		902 ... 928	915.1 ... 927.8	921.4 ... 927.7 [MHz]
Transmission capacity		1 W	1 W	1 W
Analog input				
Number of inputs		1		
Signal range		4 mA ... 20 mA		
Input resistance		< 170 Ω		
Digital input				
Number of inputs		2		
Signal range		5 V AC/DC ... 30 V AC/DC		
Switching level	1 signal ("H")	Min. 5 V DC		
	0 signal ("L")	Max. 1.5 V DC		
Analog output				
Number of outputs		1		
Signal range		4 mA ... 20 mA		
Load R_B		700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)		
Digital output				
Contact type		3 floating N/O contacts		
Switching voltage		30 V DC / 250 V AC		
Switching current		2 A		
General data				
Supply voltage		9 ... 30 V AC/DC		
Current consumption	Typ./max.	75 mA / 200 mA		
Degree of protection		IP20		
Ambient temperature range		-40°C ... 70°C		
Housing material		Polyamide PA non-reinforced		
Dimensions W / H / D		22.5 / 99 mm / 114.5		
Conformance / approvals				
Conformity		FCC directive, Part 15.247 ISC directive RSS 210		
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D		

Repeater
(bidirectional)

Point-to-point
(bidirectional)



Point-to-multipoint
(unidirectional)



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Extension modules

Analog and digital extension modules as well as modules for pulse counting and frequency transmission are available for extension of the bidirectional RAD-Line IO and RAD-Line serial wireless systems.

The extension modules can be aligned easily using the laterally integrated bus foot. Signal data and supply voltage are routed through using the bus foot. With up to eight modules, the system can be extended to a maximum of 33 analog or 66 digital signals.

Ex n

RAD-...-4A-I

Analog modules for 4 inputs or 4 outputs

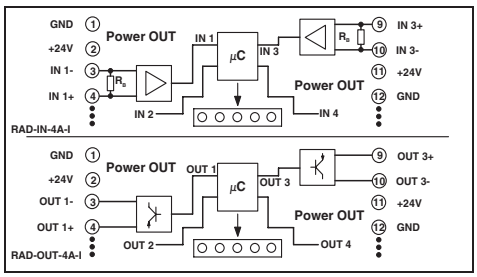
Ex n

RAD-...-8D(-REL)

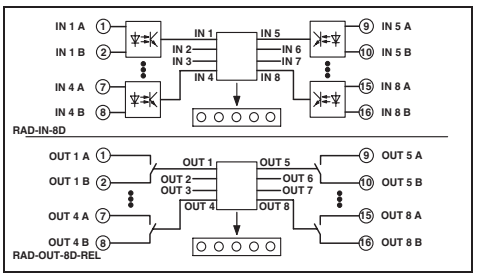
Digital modules for 8 inputs or 8 outputs

	solid [mm²]	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Housing width 22.5 — Ex:



Housing width 22.5 — Ex:



Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Extension module	Analog IN	**RAD-IN-4A-I**	**2867115**	1			
Extension module	Analog OUT	**RAD-OUT-4A-I**	**2867128**	1			
Extension module	Digital IN				**RAD-IN-8D**	**2867144**	1
Extension module	Digital OUT				**RAD-OUT-8D-REL**	**2867157**	1
Extension module	Mixed I/O						

Technical data		RAD-IN-4A-I	RAD-OUT-4A-I	RAD-IN-8D	RAD-OUT-8D-REL
Analog input					
Number of inputs		4	-	-	-
Signal range		4 mA ... 20 mA	-	-	-
Input resistance		< 170 Ω	-	-	-
Digital input					
Number of inputs		-	-	8	-
Signal range		-	-	5 V AC/DC ... 30 V AC/DC	-
Switching level	1 signal ("H")	-	-	Min. 5 V DC	-
	0 signal ("L")	-	-	Max. 1.5 V DC	-
Input frequency		-	-	-	-
Pulse length		-	-	-	-
Analog output					
Number of outputs		-	4	-	-
Signal range		-	4 mA ... 20 mA	-	-
Load R_B		-	700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	-	-
Digital output					
Contact type		-	-	-	Relay output
Switching voltage		-	-	-	30 V AC/DC (EC Declaration of Conformity) 30 V DC (with UL approval) 250 V AC (with UL approval)
Switching current		-	-	-	0.5 A (EC Declaration of Conformity) 2 A (with UL approval)
Clock frequency		-	-	-	-
Frequency output		-	-	-	-
General data					
Supply voltage		9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)	9 V DC ... 30 V DC (via bus foot)
Current consumption	Typ./max.	100 mA / 130 mA	100 mA / 130 mA	25 mA / 30 mA	100 mA / 160 mA
Degree of protection		IP20	IP20	IP20	IP20
Ambient temperature range		-20°C ... 65°C	-20°C ... 65°C	-20°C ... 65°C	-20°C ... 65°C
Housing material		Polyamide PA non-reinforced	Polyamide PA non-reinforced	Polyamide PA non-reinforced	Polyamide PA non-reinforced
Dimensions W / H / D		22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm	22.5 / 99 / 114.5 mm
Conformance / approvals					
Conformity		CE compliant		CE compliant	
ATEX		Ⓔx II 3 G EEx nL IIC		Ⓔx II 3 G EEx nL IIC	
IECEx		Ex nL IIC		Ex nL IIC	
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D		Class I, Div. 2, Groups A, B, C, D	

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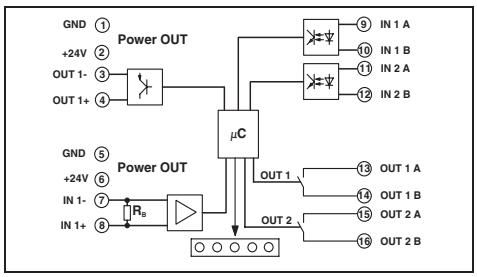
Ex n

RAD-IN+OUT-2D-1A-I

Analog/digital module for 2 digital inputs/outputs and 1 analog input/output

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-IN+OUT-2D-1A-I	**2867322**	1

1	
4 mA ... 20 mA	
< 170 Ω	
2	
5 V AC/DC ... 30 V AC/DC	
Min. 5 V DC	
Max. 1.5 V DC	
-	
-	
1	
4 mA ... 20 mA	
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)	
Relay output	
30 V AC/DC (EC Declaration of Conformity)	
30 V DC (with UL approval)	
250 V AC (with UL approval)	
0.5 A (EC Declaration of Conformity)	
2 A (with UL approval)	
-	
-	
9 V DC ... 30 V DC (via bus foot)	
70 mA / 110 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
Ex nL IIC T5	
Class I, Div. 2, Groups A, B, C, D	

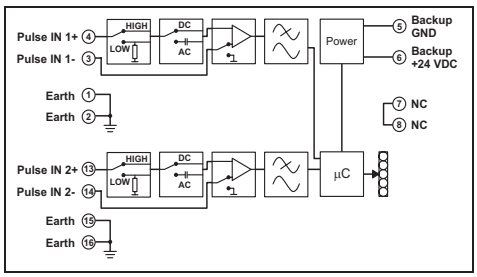
Ex n

RAD-IN-2D-CNT

Digital module for two counter/frequency inputs

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-IN-2D-CNT	**2885223**	1

-	
-	
-	
2	
0.1 V AC/DC ... 30 V AC/DC	
(common mode 3.6 V DC) / (differential mode 100 mV_{PP})	
-	
(0.1 Hz ... 10 kHz (50% duty Cycle))	
(high time 50 µs)	
-	
-	
-	
-	
-	
-	
9 V DC ... 30 V DC (via bus foot)	
35 mA / 45 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
-	
Class I, Div. 2, Groups A, B, C, D	

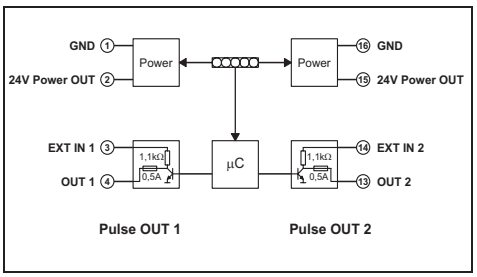
Ex n

RAD-OUT-2D-CNT

Digital module for two counter/frequency outputs

Housing width 22.5

Ex:



Type	Order No.	Pcs. / Pkt.
RAD-OUT-2D-CNT	**2885236**	1

-	
-	
-	
-	
-	
-	
-	
-	
-	
Transistor output, passive	
-	
Approx. 27 mA (terminal 3/14)	
Approx. 25 mA (terminal 4/13)	
(high Speed 10 kHz with 50% duty Cycle)	
(low speed 10 Hz with 50% duty cycle)	
(0.1 Hz ... 10 kHz (50% duty Cycle))	
9 V DC ... 30 V DC (via bus foot)	
90 mA / 115 mA	
IP20	
-20°C ... 65°C	
Polyamide PA non-reinforced	
22.5 / 99 / 114.5 mm	
CE compliant	
Ex II 3 G EEx nL IIC	
-	
Class I, Div. 2, Groups A, B, C, D	

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RAD-Line IO - UD wireless system with Trusted Wireless

The unidirectional wireless systems **RAD-ISM-900-SET...UD...** consist of a transmitter (transmitter, TX) in an IP20 or IP65 housing and a receiver (receiver, RX) in IP20 housing.

In the license-free ISM band 900 MHz, a safe and reliable signal path is prepared when using the frequency hopping method.

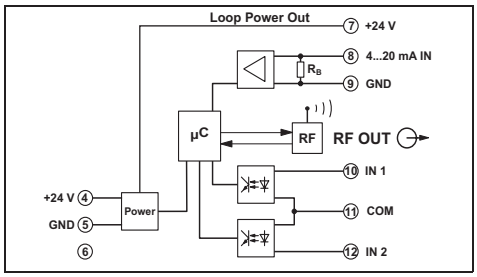
The so-called PIPE modules **RAD-ISM-900-SET-AC-UD** or **RAD-ISM-900-SET-DC-UD** can be installed directly outdoors. Thus, no additional control box is required. The convenient connection of the power supply unit and the sensors or actuators is established in a simple, rugged and quick manner.

Devices for the direct mains connection (100...240 V AC) as well as for the low-voltage range (9..30 V DC) are available. These devices can be easily supplied using extremely small batteries or solar systems.

Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-SET-UD-ANT

Set consisting of transmitter, receiver and two antennas with connecting cables



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-2.5	0.2-2.5	24-14	M3

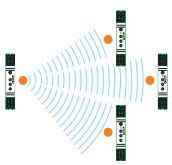
Description		Type	Order No.	Pcs. / Pkt.
Wireless set (transmitter, receiver, including antennas)	America	**RAD-ISM-900-SET-UD-ANT**	**2867102**	1
Receiver (individual)		**RAD-ISM-900-RX**	**2867047**	1
Wireless set (transmitter, receiver, including antennas)	Australia	**RAD-ISM-900-SET-UD-ANT-AU**	**2867416**	1
Receiver (individual)		**RAD-ISM-900-RX-AU**	**2867445**	1
Wireless set (transmitter, receiver, including antennas)	New Zealand	**RAD-ISM-900-SET-UD-ANT-NZ**	**2885029**	1
Receiver (individual)		**RAD-ISM-900-RX-NZ**	**2885058**	1

Technical data

		America	Australia	New Zealand	
Spark gap					
Direction		Unidirectional	Unidirectional	Unidirectional	
Frequency range		902 ... 928	915.1 ... 927.8	921.4 ... 927.7	[MHz]
Transmission capacity		1 W	1 W	1 W	
Number of channels		4 x 63	2 x 63	1 x 63	
Analog input					
Number of inputs / signal range		1 x 4 mA ... 20 mA			
Input resistance		< 150 Ω			
Digital input					
Number of inputs / signal range		2 x 5 V AC/DC ... 30 V AC/DC			
Switching level	1 signal ("H")	Min. 5 V DC			
	0 signal ("L")	Max. 1.5 V DC			
Analog output					
Number of outputs / signal range		1 x 4 mA ... 20 mA			
Load R_B		700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)			
Digital output		3 floating PDT contacts			
Switching voltage		30 V DC / 120 V AC			
Switching current		0.5 A			
General data		Transmitter (TX)		Receiver (RX)	
Supply voltage		12 V DC ... 30 V DC		12 V DC ... 30 V DC	
Current consumption	Typ./max.	75 mA / 350 mA		85 mA / 125 mA	
Degree of protection		IP20		IP20	
Ambient temperature range		-40°C ... 70°C		-40°C ... 70°C	
Housing material		Polyamide PA non-reinforced		Polyamide PA non-reinforced	
Dimensions W / H / D		17.5 / 99 / 114.5 mm		17.5 / 99 / 114.5 mm	
Conformance / approvals					
Conformity		FCC directive, Part 15.247 ISC directive RSS 210			
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D			

Point-to-point

Point-to-multipoint



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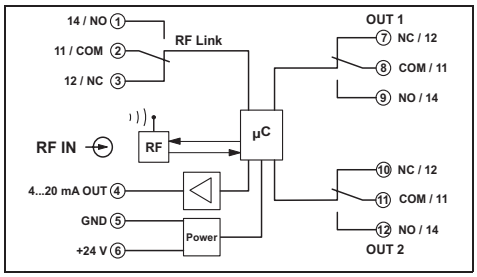
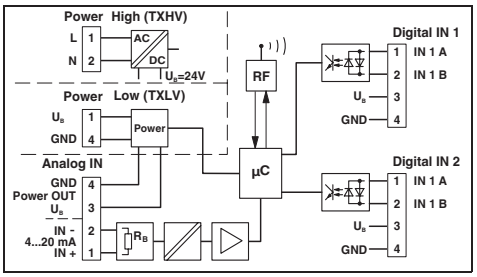
RAD-ISM-900-SET-AC-UD

Set, consisting of transmitter for the mains connection (IP65) and receiver (IP20) including antennas

RAD-ISM-900-SET-DC-UD

Set, consisting of transmitter for the low-voltage range (IP65) and receiver (IP20) including antennas





Type	Order No.	Pcs. / Pkt.
RAD-ISM-900-SET-AC-UD	**2867021**	1
RAD-ISM-900-SET-AC-UD-AU	**2867429**	1
RAD-ISM-900-SET-AC-UD-NZ	**2885032**	1

America	Australia	New Zealand	
Unidirectional	Unidirectional	Unidirectional	
902 ... 928	915.1 ... 927.8	921.4 ... 927.7	[MHz]
1 W	1 W	1 W	
4 x 63	2 x 63	1 x 63	
1 x 4 mA ... 20 mA			
< 170 Ω			
2 x 85 V AC ... 240 V AC			
-			
-			
1 x 4 mA ... 20 mA			
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)			
3 floating PDT contacts			
30 V DC / 120 V AC			
0.5 A			
Transmitter (TX)		Receiver (RX)	
100 V AC ... 240 V AC		12 V DC ... 30 V DC	
57 mA / 109 mA		85 mA / 125 mA	
IP65		IP20	
-40°C ... 70°C		-40°C ... 70°C	
5052H32AL PBT		Polyamide PA non-reinforced	
57 / 280 / 57 mm		17.5 / 99 / 114.5 mm	
FCC directive, Part 15.247			
ISC directive RSS 210			
Class I, Div. 2, Groups A, B, C, D			

Type	Order No.	Pcs. / Pkt.
RAD-ISM-900-SET-DC-UD	**2867034**	1
RAD-ISM-900-SET-DC-UD-AU	**2867432**	1
RAD-ISM-900-SET-DC-UD-NZ	**2885045**	1

America	Australia	New Zealand	
Unidirectional	Unidirectional	Unidirectional	
902 ... 928	915.1 ... 927.8	921.4 ... 927.7	[MHz]
1 W	1 W	1 W	
4 x 63	2 x 63	1 x 63	
1 x 4 mA ... 20 mA			
< 170 Ω			
2 x 5 V AC/DC ... 30 V AC/DC			
Min. 5 V DC			
Max. 1.5 V DC			
1 x 4 mA ... 20 mA			
700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)			
3 floating PDT contacts			
30 V DC / 120 V AC			
0.5 A			
Transmitter (TX)		Receiver (RX)	
9 V DC ... 30 V DC		12 V DC ... 30 V DC	
75 mA / 350 mA		85 mA / 125 mA	
IP65		IP20	
-40°C ... 70°C		-40°C ... 70°C	
5052H32AL PBT		Polyamide PA non-reinforced	
57 / 280 / 57 mm		17.5 / 99 / 114.5 mm	
FCC directive, Part 15.247			
ISC directive RSS 210			
Class I, Div. 2, Groups A, B, C, D			

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RAD-Line IO - XD wireless system with Trusted Wireless

The bidirectional wireless system **RAD-ISM-900-XD-BUS** offers a safe and reliable signal path in the license-free ISM band 900 MHz bandwidth.

The wireless system enables structuring of systems with up to eight transmitting stations in the field (multipoint-to-point). Thus, no programming or parameterization is necessary. The signals of the field stations are output to the master station again. The integrated bus foot allows additional I/O modules to be connected in rows.

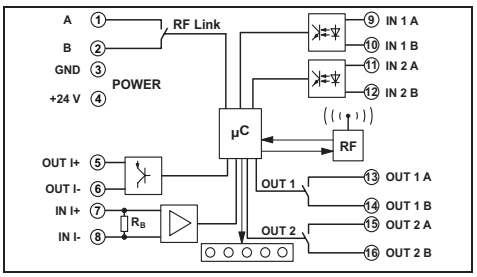
Note: You can find accurate order options and documentations on www.phoenixcontact.net/catalog.

Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-XD-BUS

Transceiver (transmitter and receiver) for setting up multi-transmitter systems (multi-point-to-point)

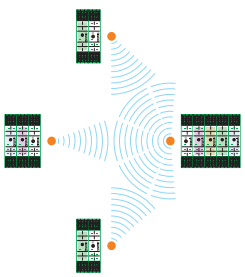
Housing width 22.5



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Description	Type	Order No.	Pcs. / Pkt.
Wireless system, visit www. phoenixcon.com for more information	**RAD-ISM-900-XD-BUS**	**2885605**	1

Technical data		
Spark gap		
Direction		Bidirectional
Frequency range		902 MHz ... 928 MHz
Transmission capacity		1 W
Number of channels		4 x 63
Analog input		
Number of inputs		1
Signal range		4 mA ... 20 mA
Input resistance		< 170 Ω
Digital input		
Number of inputs		2
Signal range		5 V AC/DC ... 30 V AC/DC
Switching level	1 signal ("H")	Min. 5 V DC
	0 signal ("L")	Max. 1.5 V DC
Analog output		
Number of outputs		1
Signal range		4 mA ... 20 mA
Load R_B		700 Ω (at U_B = 24 V, R_B = [U_B-10 V] / 20 mA)
Digital output		
Contact type		3 floating N/O contacts
Switching voltage		30 V DC / 250 V AC
Switching current		2 A
General data		
Supply voltage		9 ... 30 V AC/DC
Current consumption	Typ./max.	75 mA / 200 mA
Degree of protection		IP20
Ambient temperature range		-40°C ... 70°C
Housing material		Polyamide PA non-reinforced
Dimensions W / H / D		22.5 / 99 mm / 114.5
Conformance / approvals		
Conformity		FCC directive, Part 15.247 ISC directive RSS 210



Multipoint-to-point

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RAD-Line serial IO - BD wireless system for transmission of serial data and IO signals

The bidirectional data transmission systems **RAD-ISM-900-DATA-BD-BUS...** allow wireless connection of several decentral controllers and the reception and output of I/O signals from the field to a central location (controller).

Besides the RS-232, RS-422/RS-485 interface, extension modules from the bidirectional wireless system can also be connected through the lateral bus foot. This enables sensors and actuators in the field to be acquired and connected via radio to a controller. The operating modes point-to-point, point-to-multipoint and multipoint to-point are possible.

An individual module can be parameterized as master, slave or repeater slave using easy-to use software. Up to 254 slaves can operate on one master. The transmission is transparent and does not depend on the protocol. The convenient diagnostics software tool can be used to modify wireless parameters of the network devices and to monitor the network for its transmission quality.

Note: You can download the basic software for configuration and diagnostics of two network devices www.phoenixcontact.net/download free of cost on. A software license is required for the diagnostic functions of several network devices.

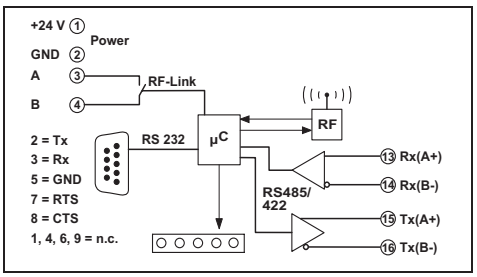
Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-DATA-BD-BUS

Wireless transceiver for serial interfaces (RS-232, RS-422/RS-485), can be extended

Housing width 22.5

Ex: cULus



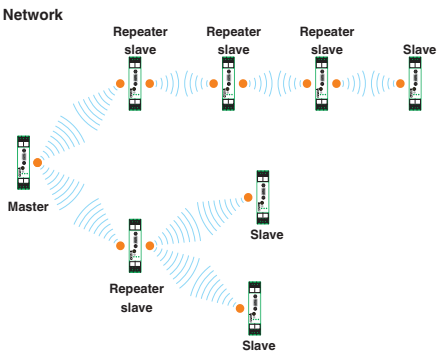
	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-12	M3

Description		Type	Order No.	Pcs. / Pkt.
Radio module with serial interface	America	**RAD-ISM-900-DATA-BD-BUS**	**2867296**	1
Radio module with serial interface	Australia	**RAD-ISM-900-DATA-BD-BUS-AU**	**2867996**	1
Radio module with serial interface	New Zealand	**RAD-ISM-900-DATA-BD-BUS-NZ**	**2885168**	1

Technical data

Spark gap	America	Australia	New Zealand
Direction	Bidirectional	Bidirectional	Bidirectional
Frequency range	902 ... 928	915.1 ... 927.8	921.4 ... 927.7 [MHz]
Transmission capacity	1 W	1 W	1 W
Number of channels	4 x 63	2 x 63	1 x 63
Serial port	RS-232		RS-485/RS-422
Connection method	SUB-D 9 (socket)		Pluggable COMBICON screw terminal block
Serial transmission rate	1.2 / 2.4 / 9.6 / 19.2 / 38.4 kbps		1.2 / 2.4 / 9.6 / 19.2 / 38.4 kbps
Data format/coding	Asynchronous		
Data flow control/protocols	RTS/CTS		
General data			
Supply voltage	9 ... 30 V AC/DC		
Current consumption Typ./max.	110 mA / 180 mA		
Degree of protection	IP20		
Ambient temperature range	-40°C ... 70°C		
Housing material	Polyamide PA non-reinforced		
Dimensions W / H / D	22.5 / 99 mm / 114.5		
Conformance / approvals			
Conformity	FCC directive, Part 15.247 ISC directive RSS 210		
UL, USA / Canada	Class I, Div. 2, Groups A, B, C, D		

Network



RAD-Line serial - BD wireless system for transmission of serial data

The bidirectional data transmission systems **RAD-ISM-900-DATA-BD...** (RS-232, RS-422/RS-485) for serial interfaces transport RS-232, RS-422 or RS-485 data over medium and large distances using the tried-and-tested Trusted Wireless wireless technology.

Control units can be internetworked and remote serial periphery can be connected. The operating modes point-to-point, point-to-multipoint and multipoint-to-point are possible.

An individual module can be parameterized as master, slave or repeater slave using easy-to use software. Up to 254 slaves can operate on one master. The transmission is transparent and does not depend on the protocol. The convenient diagnostics software tool can be used to modify wireless parameters of the network devices and to monitor the network for its transmission quality.

Note: You can download the basic software for configuration and diagnostics of two network devices www.phoenixcontact.net/download free of cost on. A software license is required for the diagnostic functions of several network devices.

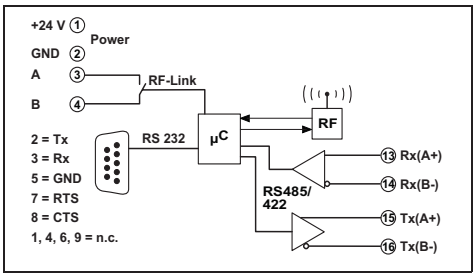
Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-DATA-BD

Wireless transceiver for serial interfaces (RS-232, RS-422/RS-485)

Housing width 22.5

Ex: cULus



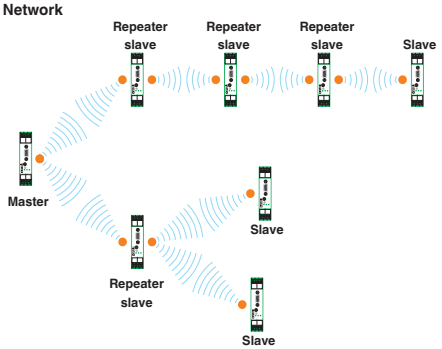
	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-12	M3

Description		Type	Order No.	Pcs. / Pkt.
Radio module with serial interface	America	**RAD-ISM-900-DATA-BD**	**2867131**	1
Radio module with serial interface	Australia	**RAD-ISM-900-DATA-BD-AU**	**2867953**	1
Radio module with serial interface	New Zealand	**RAD-ISM-900-DATA-BD-NZ**	**2885155**	1

Technical data

	America	Australia	New Zealand
Spark gap			
Direction	Bidirectional	Bidirectional	Bidirectional
Frequency range	902 ... 928	915.1 ... 927.8	921.4 ... 927.7 [MHz]
Transmission capacity	1 W	1 W	1 W
Number of channels	4 x 63	2 x 63	1 x 63
Serial port	RS-232		RS-485/RS-422
Connection method	SUB-D 9 (socket)		Pluggable COMBICON screw terminal block
Serial transmission rate	1.2 / 2.4 / 9.6 / 19.2 / 38.4 kbps		1.2 / 2.4 / 9.6 / 19.2 / 38.4 kbps
Data format/coding	Asynchronous		
Data flow control/protocols	RTS/CTS		
General data			
Supply voltage	9 ... 30 V AC/DC		
Current consumption Typ./max.	110 mA / 180 mA		
Degree of protection	IP20		
Ambient temperature range	-40°C ... 70°C		
Housing material	Polyamide PA non-reinforced		
Dimensions W / H / D	22.5 / 99 mm / 114.5		
Conformance / approvals			
Conformity	FCC directive, Part 15.247 ISC directive RSS 210		
UL, USA / Canada	Class I, Div. 2, Groups A, B, C, D		

Network



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RAD-Line serial - BD wireless system for transmission of serial data

The bidirectional data transmission systems **RAD-ISM-900-RS232-BD...** (RS-232) for serial interfaces transport RS-232 data over medium and large distances using the tried-and-tested Trusted Wireless wireless technology.

Control units can be internetworked and remote serial periphery can be connected. The operating modes point-to-point, point-to-multipoint and multipoint-to-point are possible.

An individual module can be parameterized as master, slave or repeater slave using easy-to use software. Up to 254 slaves can operate on one master. The transmission is transparent and does not depend on the protocol. The convenient diagnostics software tool can be used to modify wireless parameters of the network devices and to monitor the network for its transmission quality.

Note: You can download the basic software for configuration and diagnostics of two network devices www.phoenixcontact.net/download free of cost on. A software license is required for the diagnostic functions of several network devices.

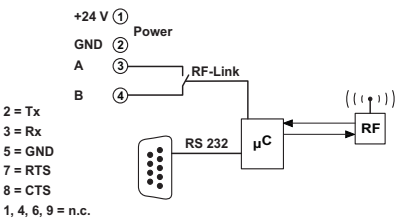
Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-RS232-BD

Wireless transceiver for serial interfaces (RS-232)

Housing width 22.5

Ex: cULus



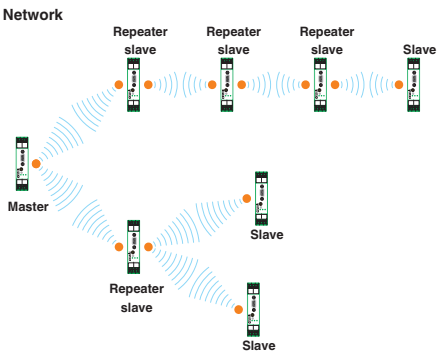
	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-12	M3

Description		Type	Order No.	Pcs. / Pkt.
Radio module with serial interface	America	**RAD-ISM-900-RS232-BD**	**2867555**	1
Radio module with serial interface	Australia	**RAD-ISM-900-RS232-BD-AU**	**2867940**	1
Radio module with serial interface	New Zealand	**RAD-ISM-900-RS232-BD-NZ**	**2885142**	1

Technical data

Spark gap	America	Australia	New Zealand	
Direction	Bidirectional	Bidirectional	Bidirectional	
Frequency range	902 ... 928	915.1 ... 927.8	921.4 ... 927.7	[MHz]
Transmission capacity	1 W	1 W	1 W	
Number of channels	4 x 63	2 x 63	1 x 63	
Serial port	RS-232			
Connection method	SUB-D 9 (socket)			
Serial transmission rate	1.2 / 2.4 / 9.6 / 19.2 / 38.4 kbps			
Data format/coding	Asynchronous			
Data flow control/protocols	RTS/CTS			
General data				
Supply voltage	9 ... 30 V AC/DC			
Current consumption	110 mA / 180 mA			Typ./max.
Degree of protection	IP20			
Ambient temperature range	-40°C ... 70°C			
Housing material	Polyamide PA non-reinforced			
Dimensions W / H / D	22.5 / 75 mm / 107.5			
Conformance / approvals				
Conformity	FCC directive, Part 15.247 ISC directive RSS 210			
UL, USA / Canada	Class I, Div. 2, Groups A, B, C, D			

Network



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RAD-Line Ethernet with Trusted Wireless

The **RAD-ISM-900-EN-BD** industrial radio transceiver brings Ethernet or serial data from remote locations to IP-based networks. The RAD-ISM-900-EN-BD features the MOTR-9™ transceiver that operates in the 902-928 MHz ISM band. It utilizes frequency hopping techniques to tolerate high interference environments and has adjustable transmit power up to 1 W. The module allows users to configure a master, slave or repeater, and features selectable 128/192/256-bit AES encryption for highly secure data transmission.

The RAD-ISM-900-EN-BD supports TCP/IP, UDP and IP v4 protocols with all programming and radio diagnostics accessible via a simple, integrated web server. The device also features user upgradeable firmware.

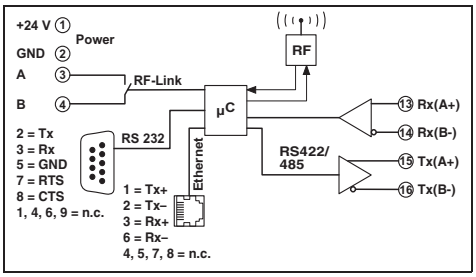
Integrated serial ports allow broadcasting RS-232/422/485 protocols to serial clients. It can also be used as a Modbus RTU/TCP gateway.

Note: The products are provided only for export outside the EU and the European Economic Area.

RAD-ISM-900-EN-BD

Wireless transceiver for Ethernet and serial interfaces (RS-232, RS-422/RS-485)

Housing width 52



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Description	Type	Order No.	Pcs. / Pkt.
Radio module with Ethernet and serial interfaces	**RAD-ISM-900-EN-BD**	**2900016**	1

Technical data			
Spark gap			
Direction		Bidirectional	
Frequency range		902 MHz ... 928 MHz	
Transmission capacity		1 W (adjustable in 1 dBm increments)	
Serial port		RS-232	RS-485/RS-422
Connection method		SUB-D 9 (socket)	Pluggable COMBICON screw terminal block
Serial transmission rate		300 ... 57.6 kbps	
Data format/coding		Asynchronous	
Data flow control/protocols		RTS/CTS	
General data			
Supply voltage		12 ... 30 V AC/DC	
Current consumption	Typ./max.	/ 250 mA	
Degree of protection		IP20	
Ambient temperature range		-40°C ... 65°C	
Housing material		Polyamide PA non-reinforced with aluminum heatsink	
Dimensions W / H / D		52 / 99 mm / 115	
Conformance / approvals			
Conformity		FCC directive, Part 15.247 ISC directive RSS 210	
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D	

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RAD-Line Ethernet with 400 mW WLAN

The **RAD-80211-XD/HP(-BUS)** high-power 400 mW industrial radio transceivers conform to IEEE standard 802.11b/g and can be used in license-free 2.4 GHz bands. These devices feature the latest high-security IEEE standard 802.11i with AES encryption and optional 802.1x authentication. The RAD-80211-XD/HP (-BUS) products support TCP/IP, UDP and IP v4 protocols.

All programming and radio diagnostics are accessible via a simple, integrated web server. Users can configure devices in access point, bridge or client modes for use in a wireless Ethernet network. In bridge mode, the radios can form a mesh with up to 40 nodes for a highly reliable radio network with several radio paths available.

RS-232/422/485 ports allow integration of legacy serial devices onto an Ethernet network. With protocol conversion, legacy Modbus RTU devices can be accessed using Modbus TCP with no additional hardware. The RAD-80211-XD/HP(-BUS) devices allow wireless accessibility to I/O through the 802.11 network. Up to eight RAD-Line I/O modules can be controlled by a Modbus-based (RTU or TCP) PLC/PC.

Note: The products are provided only for export outside the EU and the European Economic Area.

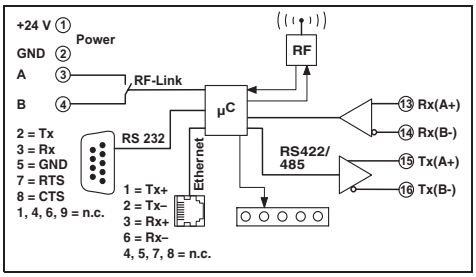
Ethernet

RAD-80211-XD/HP(BUS)

High power WLAN wireless transceiver for Ethernet and serial interfaces (RS-232, RS-422/RS-485), can be extended with I/O extension modules

Housing width 45

Ex: cULus



	solid	stranded [mm²]	AWG	Screw
Screw connection	0.2-4	0.2-2.5	24-14	M3

Description	Type	Order No.	Pcs. / Pkt.
WLAN radio module, high power transceiver with Ethernet and serial interface			
Bus foot for I/O extension modules	**RAD-80211-XD/HP-BUS**	**2900047**	1
	RAD-80211-XD/HP	**2900046**	1

Technical data			
Spark gap			
Direction		Bidirectional	
Frequency range		2.4032 GHz ... 2.4799 GHz	
Transmission capacity		400 mW	
Serial port		RS-232	RS-485/RS-422
Connection method		SUB-D 9 (socket)	Pluggable COMBICON screw terminal block
Serial transmission rate		300 ... 57.6 kbps	300 ... 57.6 kbps
Data format/coding		Asynchronous	
Data flow control/protocols		RTS/CTS	
General data			
Supply voltage		12 ... 30 V AC/DC	
Current consumption	Typ./max.	230 mA / 280 mA	
Degree of protection		IP20	
Ambient temperature range		-40°C ... 60°C	
Housing material		Polyamide PA non-reinforced	
Dimensions W / H / D		45 / 99 mm / 115	
Conformance / approvals			
Conformity		FCC directive, Part 15.247 ISC directive RSS 210	
UL, USA / Canada		Class I, Div. 2, Groups A, B, C, D	

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RAD-Line accessories
Omnidirectional antennas

Omnidirectional antennas are used for mobile or point-to-multipoint applications.
The small omni antennas are suitable for applications with a shorter range.

RAD-ISM-900-ANT-OMNI-0-6

RAD-ISM-900-ANT-OMNI-5

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Omnidirectional antenna		**RAD-ISM-900-ANT-OMNI-0-6**	**2867160**	1	**RAD-ISM-900-ANT-OMNI-5**	**2867199**	1
Technical data							
Ambient temperature range		-40°C ... 75°C			-40°C ... 80°C		
Degree of protection		IP65			IP65		
Gain		0 dBi			7 dBi		
Impedance		50 Ω			50 Ω		
Connection method		MCX (male)			N (female)		
Acceptance angle	Vertical / Horizontal	(N/A) / 360 °			17 ° / 100 °		
Dimensions W / H		3 / 89 mm			3 / 609 mm		
Frequency range		900 MHz			900 MHz		
Scope of supply		Incl. mounting material			Incl. mounting material		

Omnidirectional antennas

Omnidirectional antennas are used for mobile or point-to-multipoint applications.
Both the large OMNI antennas are suitable for mobile applications with a greater range.

RAD-...-ANT-OMNI-FG-3-N

RAD-...-ANT-OMNI-FG-6-N

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Omnidirectional antenna		**RAD-ISM-900-ANT-OMNI-FG-3-N**	**2867791**	1	**RAD-ISM-900-ANT-OMNI-FG-6-N**	**2885579**	1
Technical data							
Ambient temperature range		-40°C ... 80°C			-40°C ... 80°C		
Degree of protection		IP65			IP65		
Gain		5 dBi			8 dBi		
Impedance		50 Ω			50 Ω		
Connection method		N (female)			N (female)		
Acceptance angle	Vertical / Horizontal	28 ° / 360 °			15 ° / 360 °		
Dimensions W / H		50.8 / 1295 mm			60.5 / 1803.4 mm		
Frequency range		900 MHz			900 MHz		
Scope of supply		Incl. mounting material			Incl. mounting material		

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RAD-Line accessories
Panel antennas

Panel antennas are used if large distances have to be covered in case of a line of sight connection.

RAD-ISM-900-ANT-YAGI-3-N

RAD-ISM-900-ANT-YAGI-6.5-N

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Directional antenna							
		RAD-ISM-900-ANT-YAGI-3-N	**2867801**	1	**RAD-ISM-900-ANT-YAGI-6.5-N**	**2867814**	1
Technical data							
Ambient temperature range		-40°C ... 80°C			-40°C ... 80°C		
Degree of protection		IP65			IP65		
Gain		5 dBi			8.5 dBi		
Impedance		50 Ω			50 Ω		
Connection method		N (female) with cable (0.6 m)			N (female) with cable (0.6 m)		
Acceptance angle	Vertical / Horizontal	78 ° / 168 °			62 ° / 100 °		
Dimensions W / H		60 / 170 mm			60 / 170 mm		
Frequency range		900 MHz			900 MHz		
Scope of supply		Incl. mounting material			Incl. mounting material		

Panel antennas

Panel antennas are used if large distances have to be covered in case of a line of sight connection.

The antennas **RAD-ISM-900-ANT-YAGI-6.5...** are supplied along with extension cables.

RAD-...-ANT-YAGI-6.5-25-AS

RAD-...-ANT-YAGI-6.5-50-AS

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Panel antenna, including the extension cable							
		RAD-ISM-900-ANT-YAGI-6.5-25-AS	**2867827**	1	**RAD-ISM-900-ANT-YAGI-6.5-50-AS**	**2867830**	1
Technical data							
Ambient temperature range		-40°C ... 80°C			-40°C ... 80°C		
Degree of protection		IP65			IP65		
Gain		8.5 dBi			8.5 dBi		
Impedance		50 Ω			50 Ω		
Connection method		N (female) with cable (7.5 m)			N (female) with cable (15 m)		
Acceptance angle	Vertical / Horizontal	62 ° / 100 °			62 ° / 100 °		
Dimensions W / H		60 / 170 mm			60 / 170 mm		
Frequency range		900 MHz			900 MHz		
Scope of supply		Incl. mounting material			Incl. mounting material		

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RAD-Line accessories
Surge protection

For installation of antennas outside buildings, surge protection adapters with a replaceable gas-filled surge arrester are available.

CN-UB-...

Description		Type	Order No.	Pcs. / Pkt.
COAXTRAB, attachment plug with surge protection for coaxial cables				
N connector, male-female		**CN-UB-280DC-SB**	**2818148**	1
N connector female connector/female connector		**CN-UB-280DC-BB**	**2818850**	1
Technical data				
Ambient temperature range		-40°C ... 80°C		
Degree of protection		IP55		
Attenuation	(at 900 MHz)	0.2 dB (≤ 2.2 GHz)		
Impedance		50 Ω		

Antenna splitter

In an application with several receivers in one control cabinet, an antenna splitter **RAD-ISM-900-ANT-4** can eliminate the need for one or more antennas.

RAD-ISM-900-ANT-4

Description		Type	Order No.	Pcs. / Pkt.
Antenna splitter				
		RAD-ISM-900-ANT-4	**2867050**	1
Technical data				
Ambient temperature range		-40°C ... 85°C		
Degree of protection		IP20		
Attenuation per branch	(at 900 MHz)	3 dB		
Impedance		50 Ω		
Connection method		Type MCX (female)		

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RAD-Line accessories
Adapter cable

Various **RAD-CON...** adapter cables are available for adaptation from the wireless module to the antenna.

RAD-CON-MCX-N-SB

RAD-CON-MCX-RPSMA-EX

Description		Type	Order No.	Pcs. / Pkt.	Type	Order No.	Pcs. / Pkt.
Antenna adapter cable							
1.2 m long, MCX (male) -> N (female)		**RAD-CON-MCX-N-SB**	**2867717**	1			
1.2 m long, 90° MCX (male) -> N (female)		**RAD-CON-MCX90-N-SS**	**2885207**	1			
1.2 m long, SMA (male) -> N (female)		**RAD-CON-SMA-N-SS**	**2867403**	1			
30 cm long, MCX (male) -> MCX (male)		**RAD-CON-MCX-MCX-SS**	**2867607**	1			
Antenna adapter cable for Ex-zone 1							
90 cm long, MCX (male) -> RPSMA (male)					**RAD-CON-MCX-RPSMA-EX**	**2885621**	1
Technical data							
Ambient temperature range		-40°C ... 75°C			-40°C ... 85°C		
Attenuation	(at 900 MHz)	0.89 dB/m			Approx. 1.5 dB/m		
Impedance		50 Ω			50 Ω		
Conformance / approvals							
UL, USA / Canada		-			Class I, Div. 1, 2, Groups A, B, C, D		

Extension cable

Various **RAD-CAB...** extension cables are available for extension from the wireless module to the antenna. Connection from the wireless module to the antenna should be kept as short as possible, as every cable leads to attenuation.

RAD-CAB-RG58-10

Description	Type	Order No.	Pcs. / Pkt.
Antenna extension cable, N connection at both ends (male)			
3 m long, attenuation (at 900 MHz) 0.5 dB/m	**RAD-CAB-RG58-10**	**2867364**	1
6 m long, attenuation (at 900 MHz) 0.5 dB/m	**RAD-CAB-RG58-20**	**2867212**	1
7 m long, attenuation (at 900 MHz) 0.25 dB/m	**RAD-CAB-RG213-25**	**2867597**	1
12 m long, attenuation (at 900 MHz) 0.25 dB/m	**RAD-CAB-RG213-40**	**2867377**	1
15 m long, attenuation (at 900 MHz) 0.25 dB/m	**RAD-CAB-RG213-50**	**2867225**	1
18 m long, attenuation (at 900 MHz) 0.13 dB/m	**RAD-CAB-LMR400-60**	**2867380**	1
24 m long, attenuation (at 900 MHz) 0.13 dB/m	**RAD-CAB-LMR400-80**	**2867393**	1
30 m long, attenuation (at 900 MHz) 0.13 dB/m	**RAD-CAB-LMR400-100**	**2867238**	1
38 m long, attenuation (at 900 MHz) 0.08 dB/m	**RAD-CAB-LMR600-125**	**2885210**	1
45 m long, attenuation (at 900 MHz) 0.08 dB/m	**RAD-CAB-LMR600-150**	**2885184**	1
60 m long, attenuation (at 900 MHz) 0.06 dB/m	**RAD-CAB-LMR900-200**	**2885197**	1
Technical data			
Ambient temperature range	-40°C ... 75°C		
Impedance	50 Ω		

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Solar system – Autonomous power supply for RAD-Line wireless systems

Measuring remote sensors has been possible for some time with the RAD-Line wireless systems from Phoenix Contact. However, the question of the power supply often poses a problem.

The **Solar system RAD-SOL-SET** offers a complete autonomous energy supply. With this solar system and the corresponding wireless system RAD-ISM-900, you are now able to measure very remote sensors without being dependent on the power network.

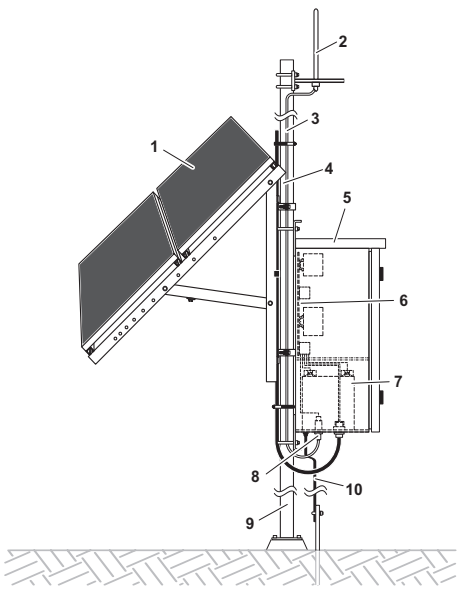
Components such as charge controller, solar battery, surge protection and fuses are already wired in a rugged control cabinet. The solar panel included generates sufficient power to supply the wireless system and to recharge the solar battery.

RAD-SOL-SET-24-40

Solar system

Description	Type	Order No.	Pcs. / Pkt.
24 V solar system, consisting of solar panel and a pre-wired control cabinet with charge controller, solar battery, surge protection, fuses and mounting material (including mast clips)	**RAD-SOL-SET-24-40**	**5605941**	1
Charge controller	**RAD-SOL-CHG-24- 10**	**2885443**	1
Solar panel			

Technical data	
Control cabinet / Solar system	
System voltage	24 V DC
Max. load (dependent on site of appl.)	1 W ... 4.7 W
Ambient temperature range	-30°C ... 60°C
Dimensions W / H / D	489 / 822.4 / 337.7 mm
Solar panel	
Output voltage	Typ. 16.9 V DC (voltage at maximum output)
Short circuit current	Max. 2.34 A
Nominal capacity	40 Wp ± 10%
Dimensions W / H / D	652 / 639 / 36 mm
Solar battery	
Nominal voltage U_N	12 V DC
Nominal capacity	40 Ah
Weight	15 kg
Dimensions W / H / D	168 / 175 / 197 mm
Charge controller	
Supply voltage	24 V DC
Current consumption	Typ. 10 mA
Nominal load	10 A
Dimensions W / H / D	152 / 55 / 34 mm



1 2 solar panels (conn. in series)
2 Antenna
3 Antenna cable
4 Flexible protective tubing
5 Control cabinet
6 Control cabinet electronics
7 Batteries
8 Surge protection for antenna cable and control cabinet electronics
9 Mast (e.g. signpost with 76 mm diameter
10 Protective earth (PE), grounding cable

Example for a typical assembly of a solar system

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RAD-SOL-SET-24-60

Solar system

RAD-SOL-SET-24-100-US

Solar system

Type	Order No.	Pcs. / Pkt.
RAD-SOL-SET-24- 60	**5605942**	1
RAD-SOL-CHG-24- 10	**2885443**	1

24 V DC
1.5 W ... 7.2 W
-30°C ... 60°C
489 / 822.4 / 337.7 mm
Typ. 16.8 V DC (voltage at maximum output)
Max. 1.94 A
30 Wp
652 / 639 / 36 mm
12 V DC
70 Ah
19 kg
168 / 178 / 259 mm
24 V DC
Typ. 10 mA
10 A
152 / 55 / 34 mm

Type	Order No.	Pcs. / Pkt.
RAD-SOL-SET-24-100-US	**5605943**	1
RAD-SOL-CHG-24- 10	**2885443**	1
RAD-SOL-PAN-12- 50	**2885456**	2

24 V DC
2.4 W ... 12 W
-30°C ... 60°C
489 / 822.4 / 337.7 mm
Typ. 17.4 V DC (voltage at maximum output)
Max. 3.11 A
54 Wp +15% (-5%)
652 / 639 / 36 mm
12 V DC
84 Ah
24 kg
172 / 210 / 260 mm
24 V DC
Typ. 10 mA
10 A
152 / 55 / 34 mm

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